



TSS-SUB4000

SERVICE MANUAL



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SPECIFICATIONS

| | |
|--------------------------|--|
| Frequency Response | 28Hz – 150Hz (–3dB) 24Hz – 180Hz (–6dB) |
| Maximum Amplifier Output | 400 watts RMS (20Hz – 150Hz with no more than 0.1% THD) |
| Crossover Frequency | 150Hz, 12dB/octave |
| Driver | 12" (305mm) MMD® |
| Dimensions (H x W x D) | 17-1/2" x 17-1/4" x 11-1/8" (445mm x 438mm x 283mm) |
| Weight | 48 lb (21.8kg) |

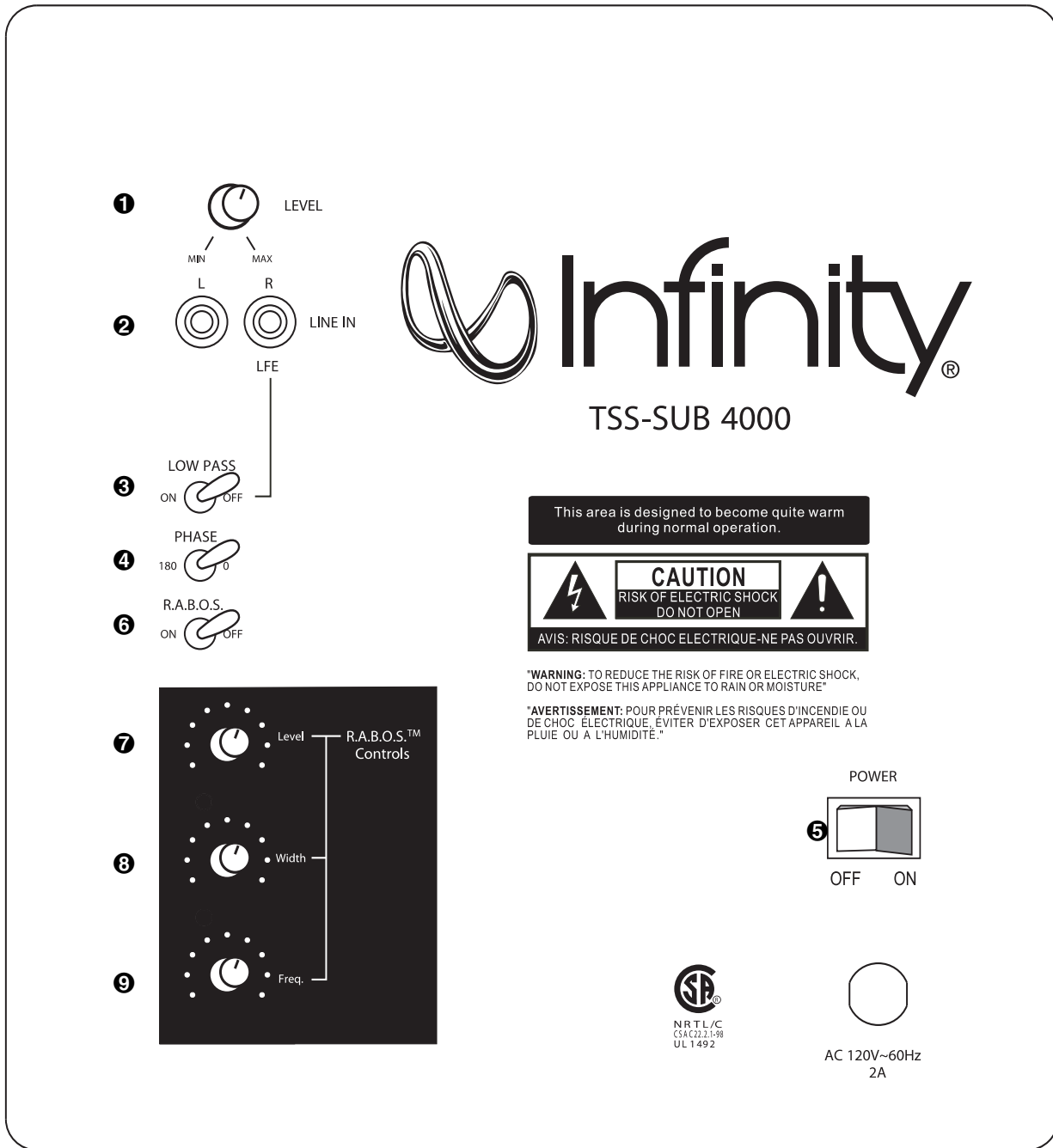
Infinity continually strives to update and improve existing products, as well as create new ones. The specifications and construction details in this and related Infinity publications are therefore subject to change without notice.

| TSS-4000 subwoofer 300W Powered Sub/ Plate Amp | | | | | |
|--|---------------|------------|----------------|--|---------------------------------|
| LINE VOLTAGE | Yes/No | Hi/Lo Line | Nom. | Unit | Notes |
| US 120vac/60Hz | Yes | 108-132 | 120 | Vrms | Normal Operation |
| EU 230vac/50-60Hz | No | 207-264 | 230 | Vrms | Normal operation, MOMS required |
| Asia 100vac/50Hz | No | 90-110 | 100 | Vrms | Normal Operation |
| Parameter | Specification | Unit | QA Test Limits | Conditions | Notes |
| Amp Section | | | | | |
| Type (Class AB, D, other) | D | --- | | | |
| Load Impedance (speaker) | 4 | Ohms | | Nominal | Z-curve required |
| Rated Output Power | 300 | Watts | | Regulated 120 V line | 5% tolerance applies |
| THD@ Rated Power | 1 | % | | 22k filter, 50Hz | 300W +/- 5% |
| THD @ 1 Watt | 0.5 | % | | 22k filter, 50Hz | |
| DC Offset | undefined | mV-DC | < 20 | @ Speaker Outputs | |
| Damping factor | 20 | N/A | > 15 | | measured at 50 Hz |
| Input Sensitivity | | | | | |
| Line/Hi Level Input Phase | N/A | | | | |
| Line Input | 370 mV | mVrms | | 300 W @ 50Hz | 1 input driven |
| Speaker/Hi Level Input | N/A | | | | |
| Signal to Noise | | | | | |
| SNR-A-Weighted | 100 | dBA | | relative to rated power | A-Weighting filter |
| SNR-unweighted | 70 | dBr | | relative to rated power | 22k filter |
| SNR rel. 1W-unweighted | 60 | dBr | | relative to 1W Output | 22k filter |
| Residual Noise Floor | 2 | mVrms | | Volume @max, using RMS reading DMM/VOM (or A/P) | |
| Residual Noise Floor | 1 | mVrms(max) | | Volume @max, w/ A/P Swept Bandpass Measurement (Line freq.+ harmonics) | |
| Input Impedance | | | | | |
| Line Input | 10 k | ohms | | Nominal | |
| Speaker/Hi Level Input | N/A | | | | |
| Active Filters | | | | | |
| Low Pass (fixed or variable) | | | | | |
| | FIXXED | -- | | | |
| Frequency | 130 | Hz | | | |
| Slope | 24 | dB/Octave | | | |
| Q | Butterworth | -- | | | |
| Subsonic filter (HPF) | | | | | |
| | fixed | -- | | | |
| Frequency | 35 | Hz | | | |
| Slope | 12 | dB/Octave | | | |
| Q | 1.2 | -- | | | |
| Line Out Filter (HPF) | | | | | |
| | NONE | -- | | | |
| Frequency | | Hz | | | |
| Slope | | dB/Octave | | | |
| Q | | -- | | | |
| Friend Circuit | | | | | |
| | FIXXED | -- | | | |
| Frequency | 66 Hz | Hz | | notch filter | |
| Slope | 6 | dB/Octave | | | |
| Q | 1.2 | -- | | | |
| Video Boost | | | | | |
| | NONE | -- | | | |
| Boost | | dB | | | |
| Range | | Hz | | | |
| Special filter | | | | | |
| | RABOS | -- | | | |
| Switches | | | | | |
| Main Power ON/OFF | YES | -- | | | |
| Type | rocker | -- | | Located on amp plate | TV-5 |
| Rabos ON/OFF | YES | -- | | | |
| Type | mini toggle | -- | | Located on amp plate | |
| Polarity Switch | YES | -- | | "Off": 0°; "On": 180° | |
| Type | mini toggle | -- | | Located on amp plate | |
| Limiters (yes/no) | | | | | |
| | YES | | | | compressor and limiter |

| Parameter | Specification | Unit | QA Test Limits | Conditions | Notes |
|-----------------------------------|----------------|---------|----------------|---|--|
| THD at Max. Output Power | less than 10 | % | | Maximum Output Power | Maximum THD as a result of limiting. |
| Output Volume Control | | | | | |
| Volume Control Pot | YES | -- | | mounted on amp panel | |
| Detent (center/#) | NO | -- | | | |
| Taper (lin/log) | log A taper | -- | | | |
| @ minimum setting | no output | | | | |
| Input/Output Phase | | | | | |
| Line Input vs. Hi Input | N/A | ° | | | |
| Lo/Hi Input vs. Lo/Hi Output | N/A | ° | | | |
| Input/Output | | | | | |
| Line In (L,C,R,AC3,Mono) | Stereo | -- | | RCA phono jack, gold plated | |
| LFE In | YES | -- | | Shared with "R" Line In jack | |
| Signal Sensing (ATO) | | | | | |
| Auto-Turn-On (yes/no) | YES | -- | | | |
| ATO Input Test Frequency | 100 | Hz | | | |
| ATO Input Threshold | 2 | mV | typ. | | LPF "On", BOS "Off" |
| ATO Low Pass cutoff | 400 | Hz | 450 | ATO-LPF for noise immunity | LPF "On", BOS "Off" |
| ATO Turn-on time | 1 | ms | 10 | Amp connected and AC on, then input signal applied (1 W output) | |
| Auto Mute / Turn-OFF Time | 10 | minutes | 5 < t < 15 | Time before muting, after signal is removed | |
| Power on Features | | | | | |
| Power on Delay time | greater than 2 | sec. | | AC Power Applied | |
| Power on LED | YES | -- | | Bi-color LED located on front of cabinet | |
| Normal On/Off | green / red | color | | ATO mode only | |
| ATO | -- | color | | "Active": green; "Standby": red | |
| Transients/Pops | | | | | |
| ATO Transient | 5 | mV-peak | | @ Speaker Output | |
| Turn-on Transient | 30 | mV-peak | | @ Speaker Output | AC Line cycled from OFF to ON |
| Turn-off Transient | 30 | mV-peak | | @ Speaker Output | AC Line cycled from ON to OFF |
| Efficiency | | | | | |
| Stand-by Input Power | 10 | Watts | typ. | @ nom. line voltage | |
| AC Power Cons.@1W | 12 | Watts | typ. | @ nom. line voltage | |
| Power Cons.@rated power | 473 | Watts | typ. | @ nom. line voltage | Input power measured is REAL Watts, not VA |
| Efficiency | 63 | % | typ. | @ nom. line voltage | |
| Protection | | | | | |
| Short Circuit Protection | YES | -- | | Direct short at output | |
| Thermal Protection | YES | -- | | threshold ~ 65 deg. C at panel | |
| DC Offset Protection | YES | -- | | DC present at Speaker Out leads | Relay for driver/fire protection |
| Line Fuse Rating (120 V) | 3.15 | Amps | | Type ADL or MDL | Fuse holder on inside surface of amp panel |
| AC Power & Transformer | | | | | |
| Power cord length | 9 | feet | | Double insulated cord, AWG#18 | |

CONTROLS AND CONNECTIONS

Rear Panel



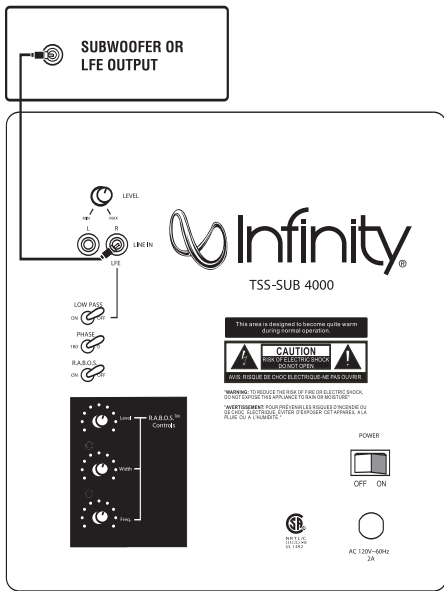
- 1** Subwoofer Level (Volume) Control
- 2** Line-Level Inputs
- 3** Normal/LFE Low-Pass Selector
- 4** Phase Switch
- 5** Power Switch

Room Adaptive Bass Optimization System Controls (see page 5)

- 6** R.A.B.O.S. Selector
- 7** R.A.B.O.S. Level Adjustment
- 8** R.A.B.O.S. Bandwidth Adjustment
- 9** R.A.B.O.S. Center-Frequency Adjustment

CONNECTIONS

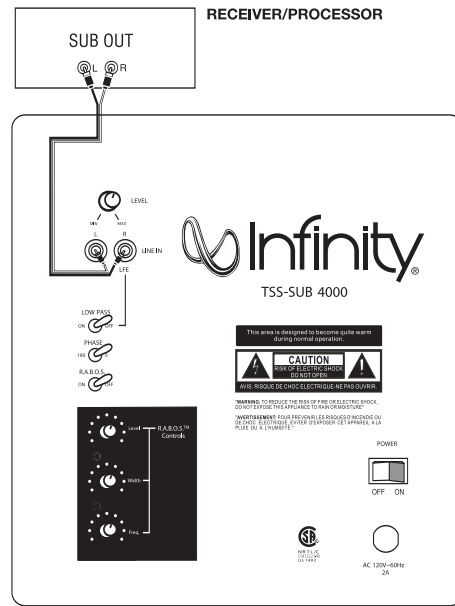
If you have a Dolby® Digital or DTS® receiver/processor with a low-frequency-effects (LFE) output:



• Set Low-Pass Switch to Off.

NOTE: In this case, you do not need to use a Y connector. Simply connect the LFE output on your receiver/processor to either the left or right input on the subwoofer.

If your receiver/processor has subwoofer outputs for the left and right channels:



• Set Low-Pass Switch to On.

NOTE: Some receivers have a single subwoofer output (do not confuse this with a single LFE output as described to the left). In that case, it is recommended that you use a Y connector (not included) to maximize performance.

OPERATION

Power On

Plug your subwoofer's AC cord into a wall outlet. Do not use the outlets on the back of the receiver.

Initially set the Subwoofer Level (Volume) Control **1** to the "min" position.

Turn on your sub by pressing the Power Switch **5** on the rear panel.

Auto On/Standby

With the Power Switch **5** in the ON position, the Power Indicator LED on the front of the subwoofer will remain backlit in red or green to indicate the On/Standby mode of the subwoofer.

RED = STANDBY (No signal detected, Amp Off)

GREEN = ON (Signal detected, Amp On)

The subwoofer will automatically enter the Standby mode after approximately 10 minutes when no signal is detected from your system. The subwoofer will then power ON instantly when a signal is detected. During periods of normal use, the Power Switch **5** can be left on. You may turn off the Power Switch **5** for extended periods of nonoperation, e.g., when you are away on vacation.

Adjust Gain

Turn on your entire audio system and start a CD or movie soundtrack at a moderate level. Turn up the Subwoofer Level (Volume) Control **1** about halfway. If no sound emanates from the subwoofer, check the AC-line cord and input cables. Are the connectors on the cables making proper contact? Is the AC plug connected to a "live" receptacle? Has the Power Switch **5** been pressed to the "On" position? Once you have confirmed that the subwoofer is active, proceed by playing a CD, record or cassette. Use a selection that has ample bass information.

Set the overall volume control of the preamplifier or stereo to a comfortable level. Adjust the Subwoofer Level (Volume) Control **1** until you obtain a pleasing blend of bass. Bass response should not overpower the room but rather should be adjusted so there is a harmonious blend across the entire musical range. Many users have a tendency to set the subwoofer volume too loud, adhering to the belief that a subwoofer is there to produce lots of bass. This is not entirely true. A subwoofer is there to enhance bass, extending the response of the entire system so the bass can be felt as well as heard. However, overall balance must be maintained or the music will not sound natural. An experienced listener will set the volume of the subwoofer so its impact on bass response is always there but never obtrusive.

Low-Pass Selector

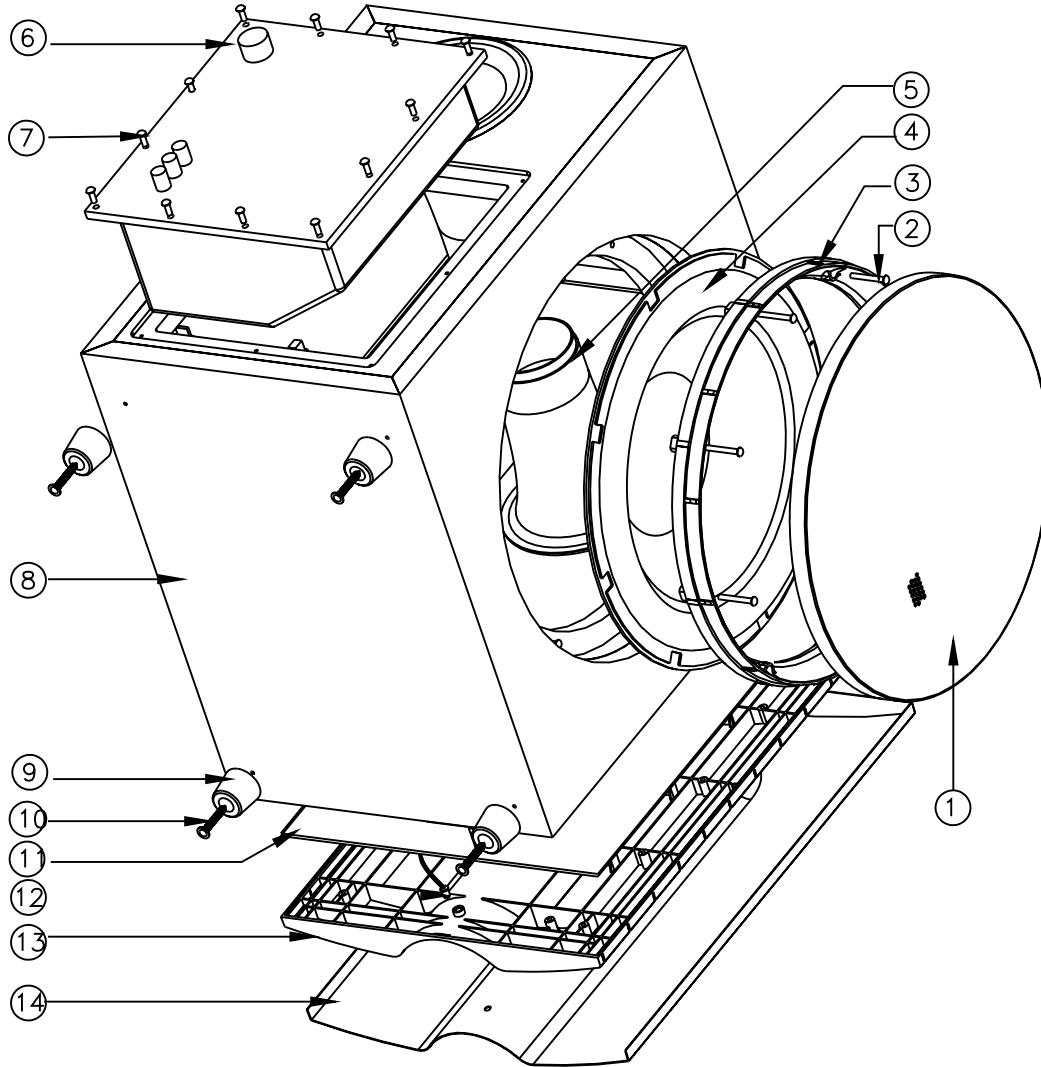
If you have a Dolby Digital or DTS processor/receiver, the Crossover Frequency is set by the processor/receiver. Consult your owner's manual to learn how to view or change this setting. In this case, the Low-Pass Selector **3** should be set to "Off". We strongly recommend this setup method.

When this switch **3** is in the "On" position, the subwoofer will reproduce frequencies below 150Hz.

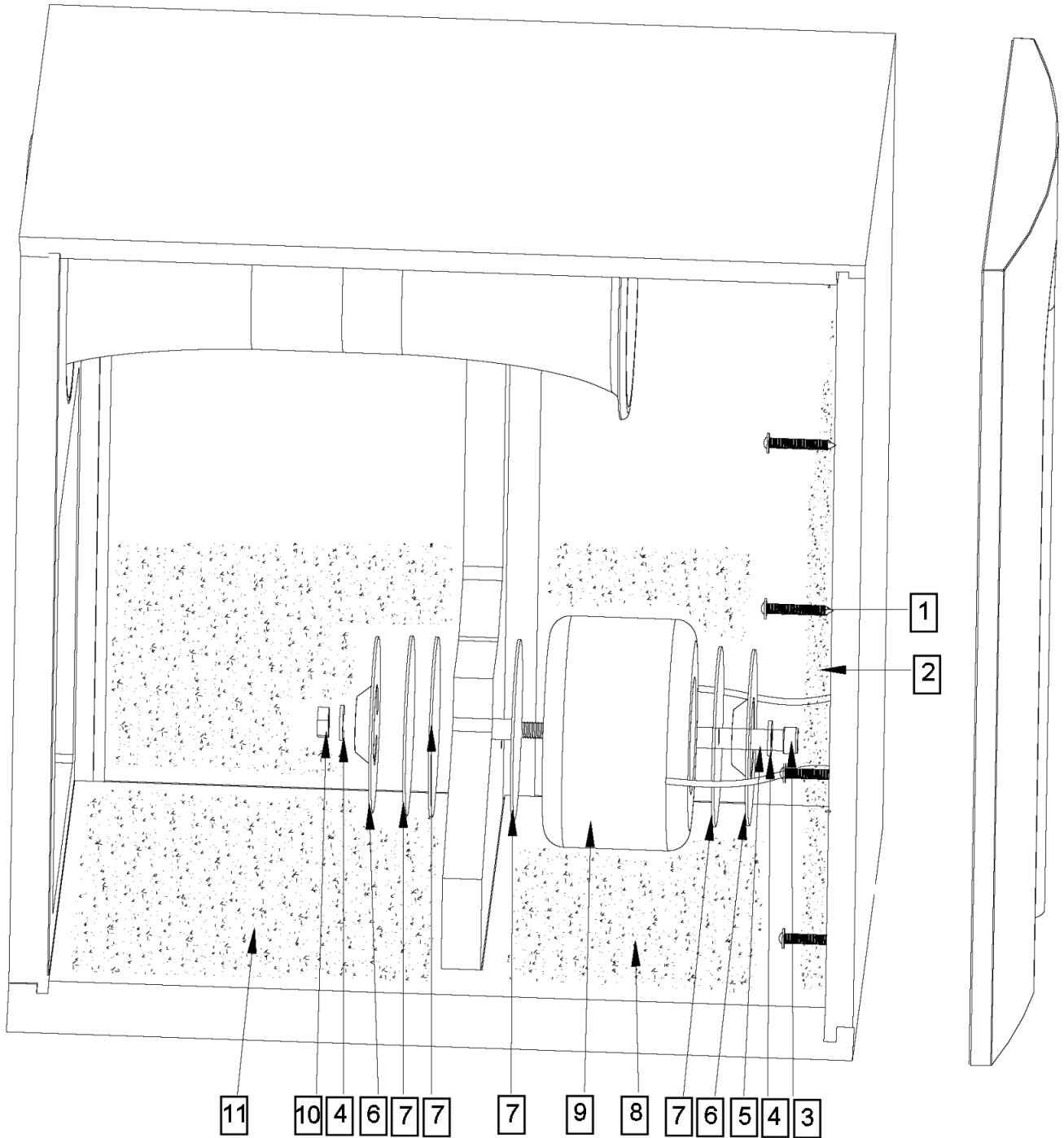
Phase Control

The Phase Switch **4** determines whether the subwoofer speaker's piston-like action moves in and out with the main speakers, 0°, or opposite the main speakers, 180°. Proper phase adjustment depends on several variables such as room size, subwoofer placement and listener position. Adjust the phase switch to maximize bass output at the listening position.

TSS-SUB4000 EXPLODED VIEW

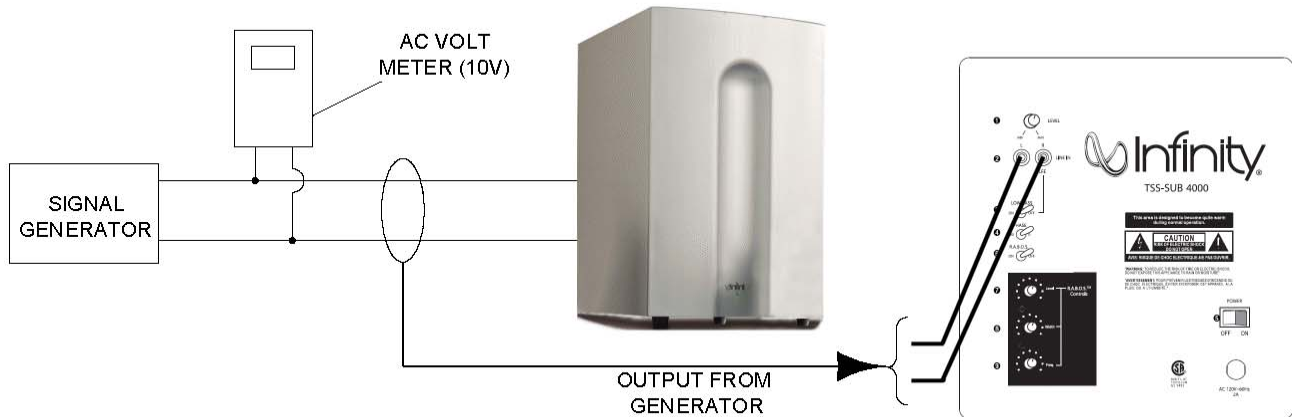


| Ref # | Description | Part Number | Qty |
|-----------|------------------------|--------------------|-----|
| 1 | Grille | 329-120-05097-0VA | 1 |
| 2 | Woofer/Trim Ring Screw | 351-AM04030A893 | 8 |
| 3 | Trim Ring | 213-120-05033-0BA | 1 |
| 4 | Woofer 12" (305mm) MMD | 30PR14BW-DW01 | 1 |
| 5 | Port Tube | 249-HIPS-05021-0VA | 1 |
| 6 | TSS-SUB4000 Amplifier | Not for Sale | 1 |
| 7 | Amplifier Screw | 352-FM04020D605 | 12 |
| 8 | TSS-SUB4000 Cabinet | Not for Sale | 1 |
| 9 | Rubber Foot | 320-RUB-05030-0BA | 4 |
| 10 | Foot Screw | 352-CM04025D604 | 4 |
| 11 | Gasket | 333-EVA-05091-0WA | 1 |
| 12 | LED | 166-A055A8GX | 1 |
| 13 | Plastic Plate | Not Serviceable | 1 |
| 14 | Aluminum Plate | Not Serviceable | 1 |
| Not Shown | Power Transformer | 150-R1107008 | 1 |



| Ref # | Description | Part Number | Qty |
|-------|--------------------|-----------------|-----|
| 1 | Screw | 352-CM03530D926 | 11 |
| 2 | Damping | | 1 |
| 3 | Main Mounting Bolt | | 1 |
| 4 | Tube Gasket | | 2 |
| 5 | Rubber | 398-RUB-05093 | 1 |
| 6 | Gasket | | 2 |
| 7 | Rubber Gasket | 336-RUB-05013 | 1 |
| 8 | Damping | | 1 |
| 9 | Power Transformer | 150-R1107008 | 1 |
| 10 | Nut | | 1 |
| 11 | Damping | | 1 |

TSS-SUB4000 Test Set Up and Procedure



SYSTEM AURAL SWEEP TEST

Equipment needed:

- Function/signal generator/sweep generator
- Multimeter
- RCA cables

General Unit Function (UUT = Unit Under Test)

Switches/knobs on the amplifier faceplate:

Phase switch – either position

Low Pass switch – Off

RABOS switch – Off

1. From the signal generator, Connect both right and left line level inputs (RCA jacks) – to signal generator and UUT. Use Y-cable if necessary from mono source.
2. On the amplifier, turn the LEVEL control full Counterclockwise (Min).
3. Turn on generator, adjust to **125mV, 50 Hz**.
4. Plug in UUT; turn the power switch ON. Turn LEVEL control full Clockwise (Max).
5. LED (on front panel) should now be Green; immediate bass response should be heard and felt from rear port tube opening.

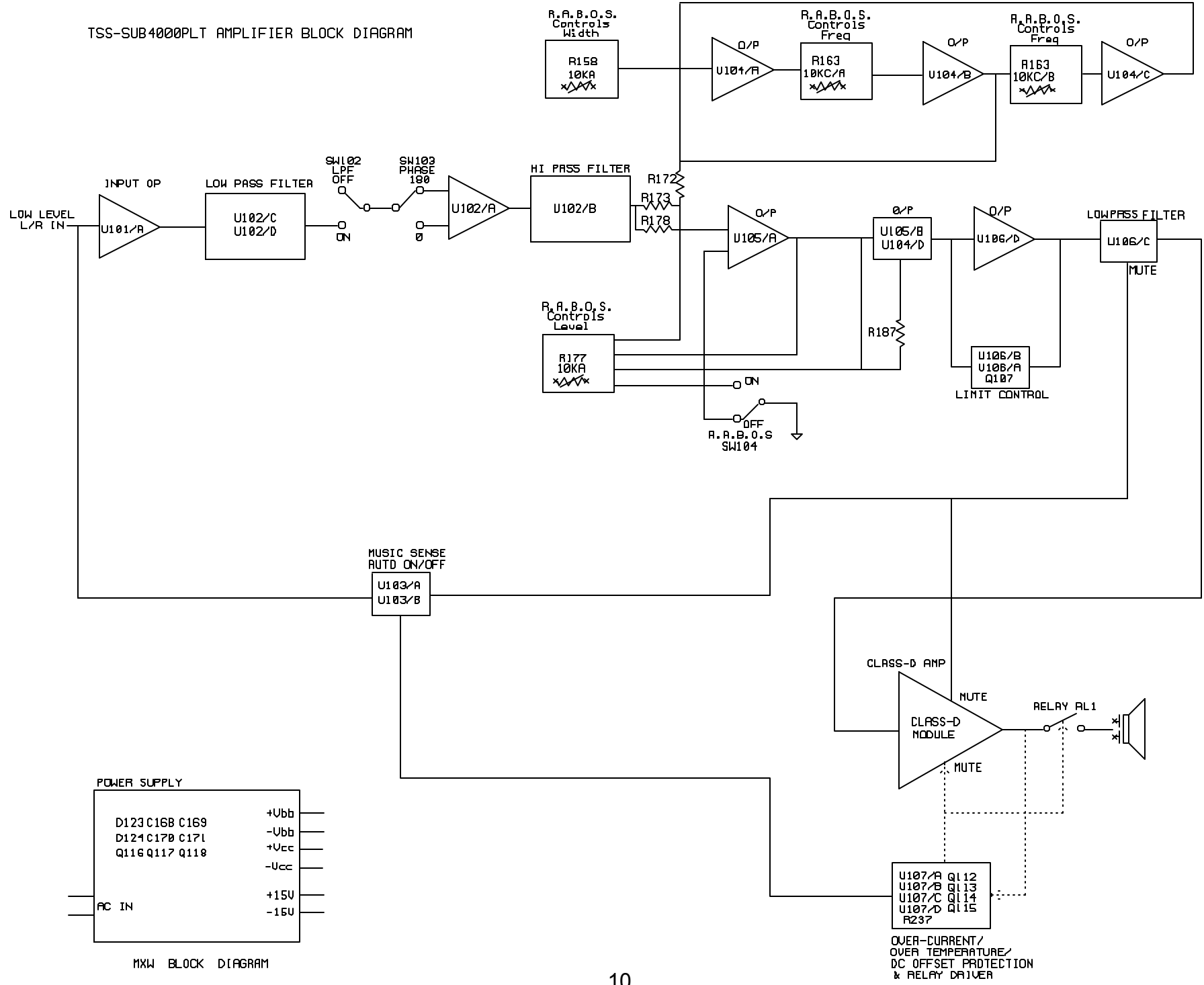
Sweep Function

1. Follow steps 1-5 above, using a sweep generator as a signal source.
2. Sweep generator from 20Hz to 1kHz. Listen to the cabinet and drivers for any rattles, clicks, buzzes or any other noises. If any unusual noises are heard, remove woofer and test.

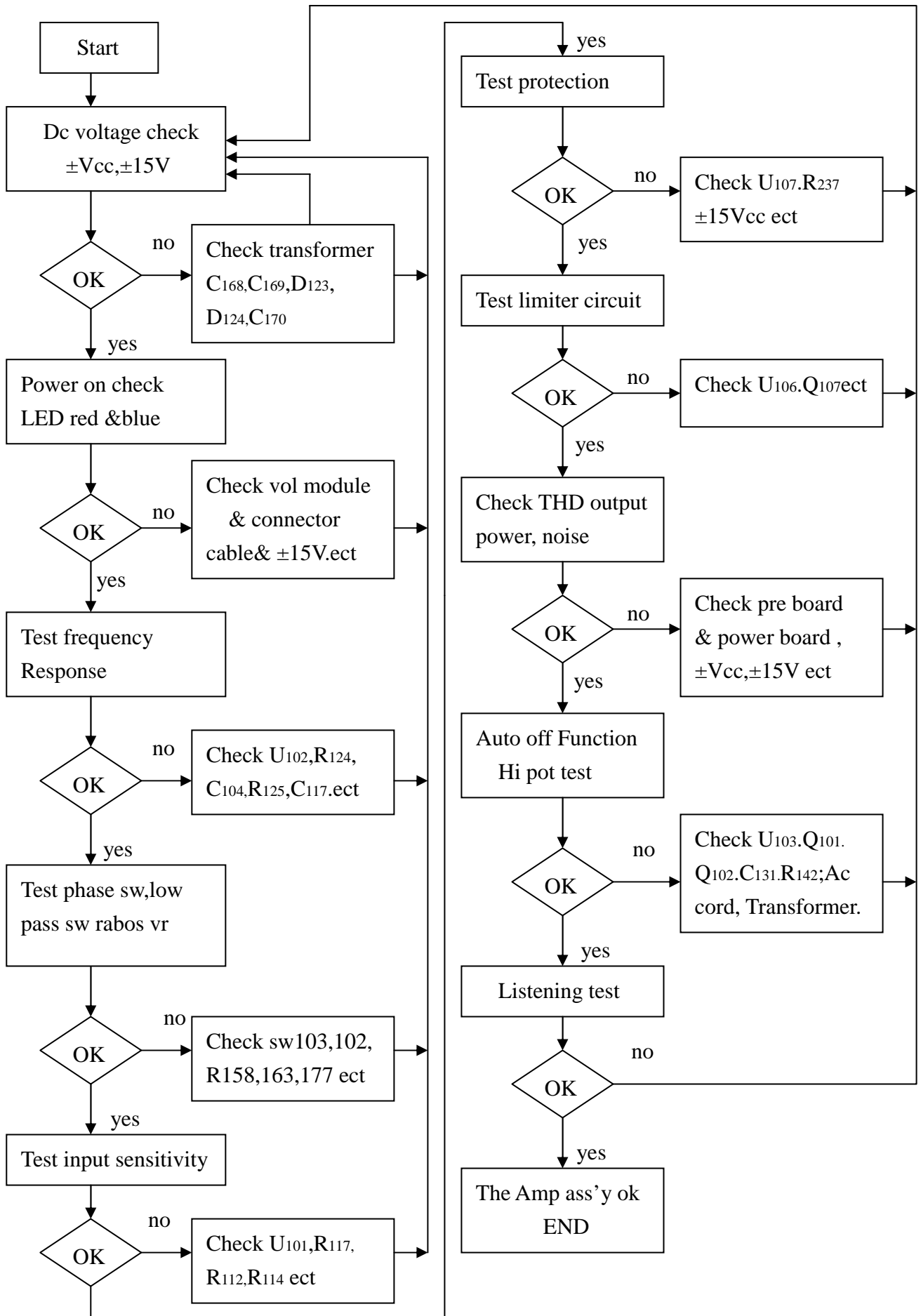
Driver Function (Woofer)

1. Remove woofer from cabinet (follow steps on exploded view page); detach + and - wire clips.
2. Check DC resistance of woofer; it should be **3.5 ohms±10%**.
3. Connect a pair of speaker cables to driver terminals. Cables should be connected to an integrated amplifier fed by a signal generator. Turn on generator and adjust so that speaker level output is **5.0V**.
4. Sweep generator from 20Hz to 1kHz. Listen to driver for any rubbing, buzzing, or other unusual noises.

TSS-SUB4000PLT AMPLIFIER BLOCK DIAGRAM



TSS-Sub4000 Testing Flow Chart



NOTICE

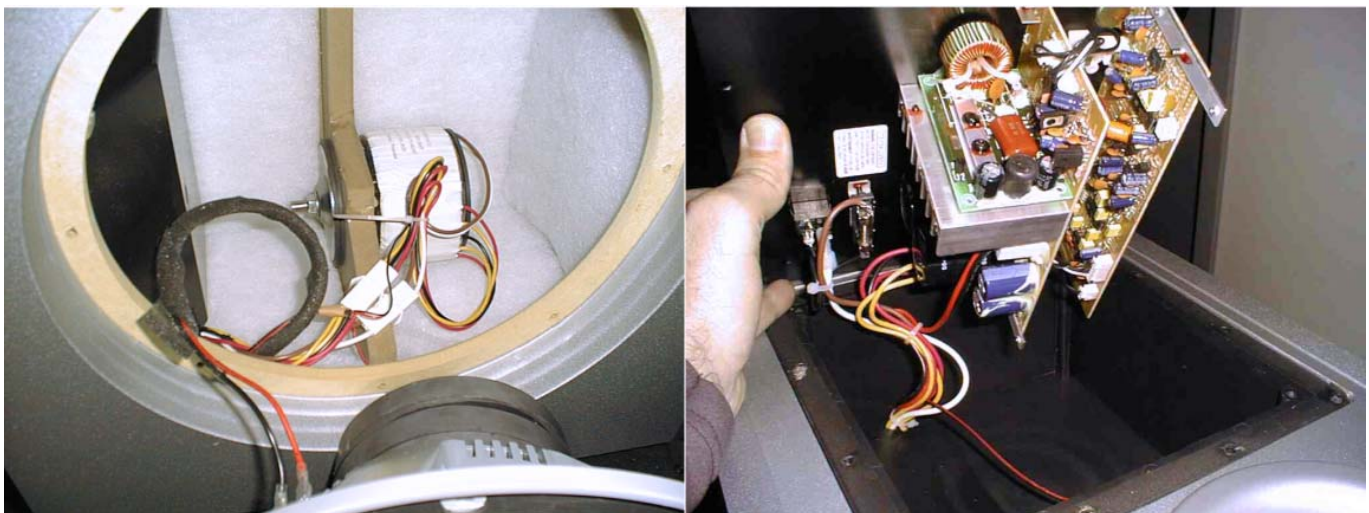
The main power transformer (toroid) part# 150-r1107008 in the TSS-SUB4000 is not mounted in the amplifier inside the amp cover, but mounted in the cabinet in a separate location.

Replacement:

To replace the power transformer, it is necessary to remove the woofer from the cabinet. The mounting bolt and transformer itself is mounted on an internal brace; both are accessible through the woofer opening. Instructions for woofer removal can be found on the exploded view, page 7.

Troubleshooting:

To keep the circuit “live” while exposing the amplifier components, the amplifier cannot completely be removed and powered up outside the cabinet due to the power connections to the externally mounted transformer. Instead, an alternate method is to leave the amp cover in place and remove the four Phillips screws holding the amp ass’y to the amp cover. Then the amplifier can be partially removed for access, while maintaining the power connections. Unplugging the LED connection (red/black wires) at the PCB plug will allow the amp to be removed even further.

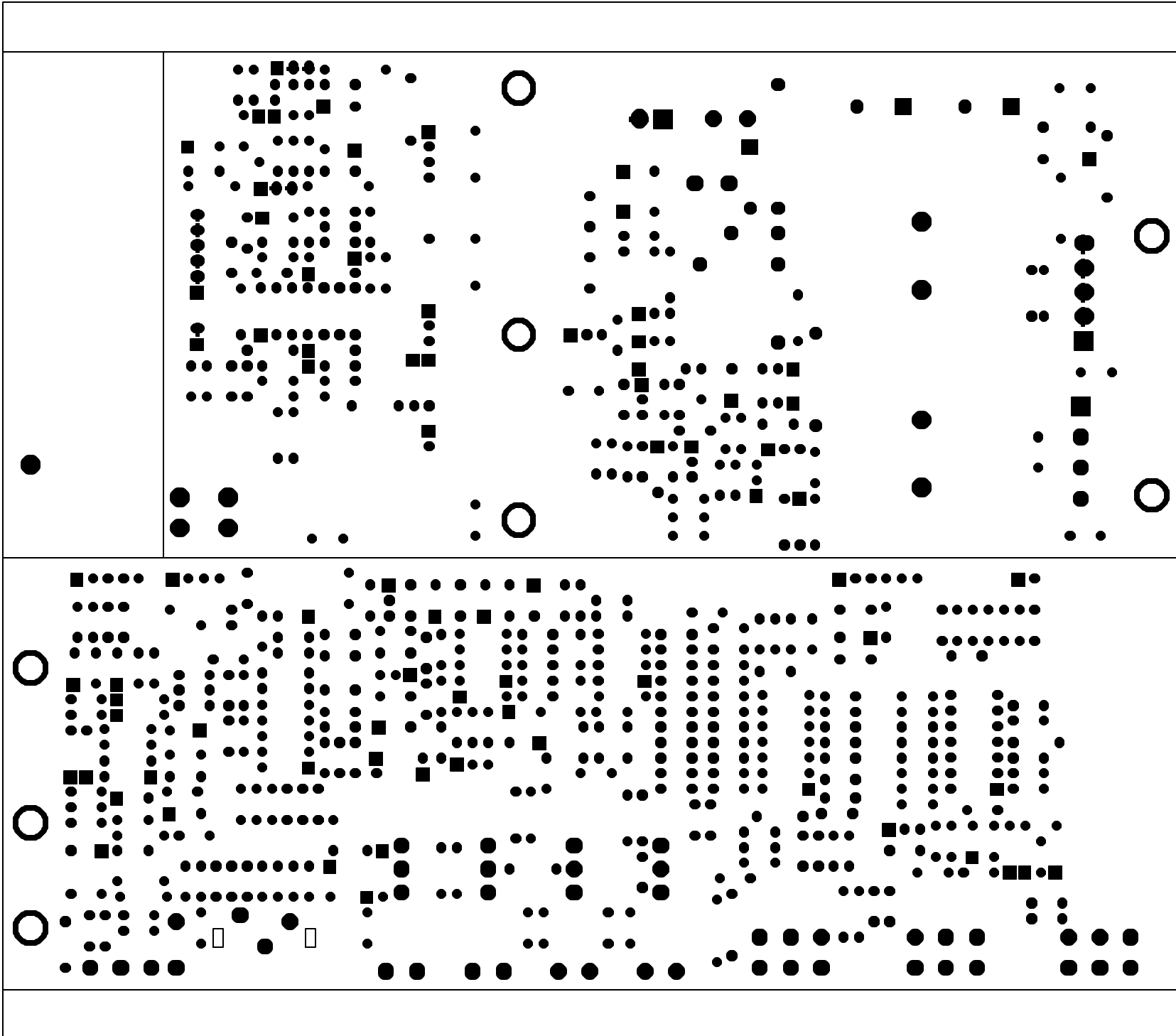


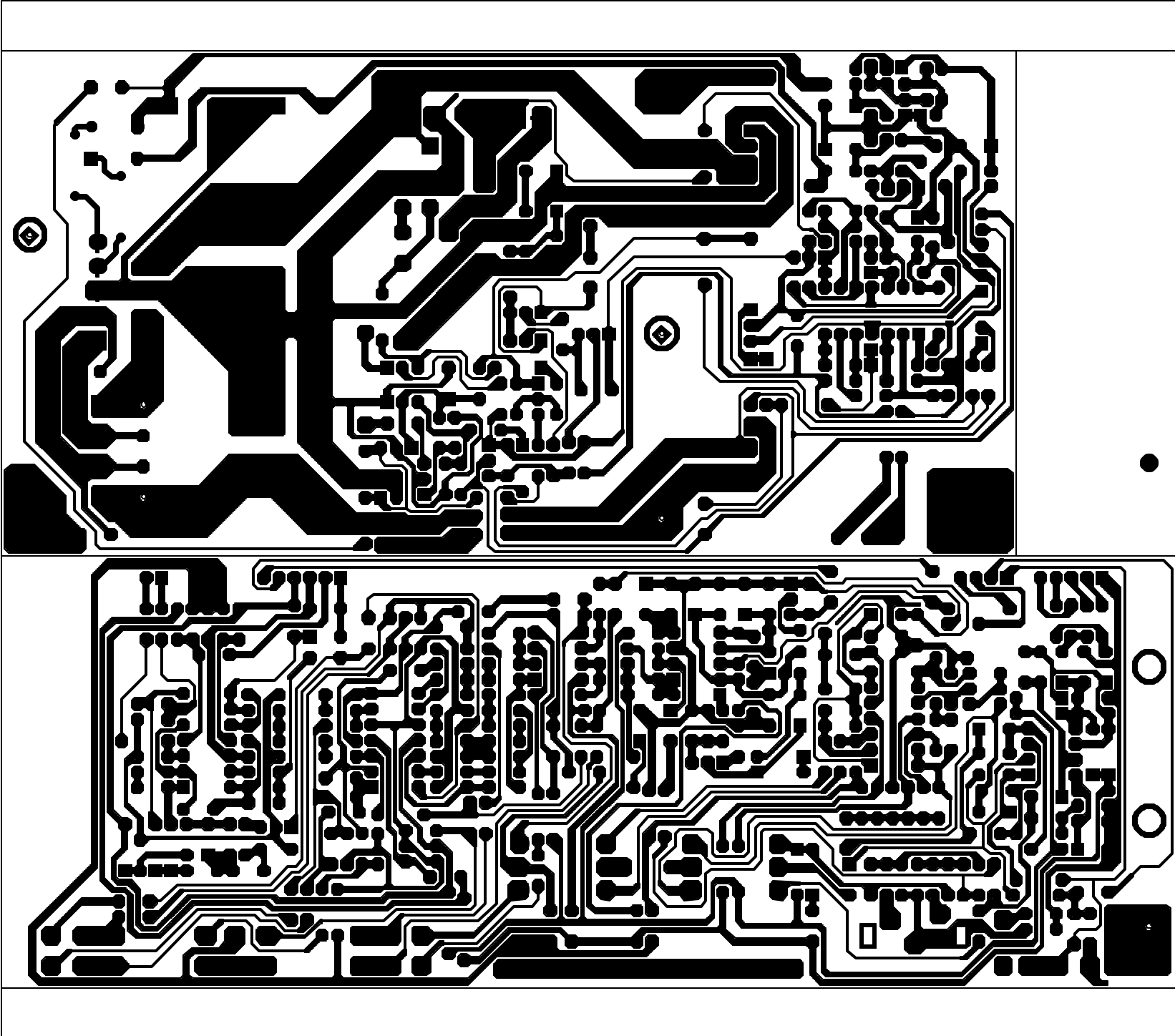
| TSS-SUB4000 120V Electrical Parts List | | | |
|--|---|-----|--------------------------------------|
| Part Number | Description | Qty | Reference Designator |
| MAIN PCB | | | |
| <i>Resistors</i> | | | |
| 110-12621j15 | Resistor 620Ω1/2W ± 5% 15mm | 1 | R238 |
| 110-16102j26 | Resistor 1K 1/6W ± 5% CF 26mm | 3 | R210,R239,R264 |
| 110-16103j26 | Resistor 10K 1/6W ± 5% CF 26mm | 9 | R227,229,230,231,232,233,260,261,263 |
| 110-16153j26 | Resistor 15K 1/6W ± 5% CF 26mm | 2 | R247,R249 |
| 110-16182j26 | Resistor 1.8K 1/6W ± 5% CF 26mm | 1 | R248 |
| 110-16222j26 | Resistor 2.2K 1/6W ± 5% CF 26mm | 2 | R242,R245 |
| 110-16223j26 | Resistor 22K 1/6W ± 5% CF 26mm | 3 | R218,R220,R223 |
| 110-16274j26 | Resistor 270K 1/6W ± 5% CF 26mm | 1 | R240 |
| 110-16333j26 | Resistor 33K 1/6W ± 5% CF 26mm | 1 | R211 |
| 110-16391j26 | Resistor 390Ω1/6W CF 26mm | 2 | R243,R246 |
| 110-16432j26 | Resistor 4.3K 1/6W ± 5% CF 26mm | 1 | R254 |
| 110-16472j26 | Resistor 4.7K 1/6W ± 5% CF 26mm | 4 | R217,219,222,213 |
| 110-16473j26 | Resistor 47K 1/6W ± 5% CF 26mm | 1 | R221 |
| 110-16683j26 | Resistor 68K 1/6W ± 5% CF 26mm | 1 | R212 |
| 122-14101j26 | fusible Resistor 1/4W 100ohm 5% | 2 | R241,R244 |
| 116-141r00j26x | metal film Resistor 1.00Ω1/4W ± 5% MO 26mm | 2 | R256,R255 |
| 116-161001f26 | metal film Resistor 1K 1/6W ± 1% MF 26mm | 2 | R252,R253 |
| 116-161002f26 | metal film Resistor 10K 1/6W ± 1% MF 26mm | 2 | R234,R235 |
| 116-161022f26 | metal film Resistor 10.2K 1/6W MF 26mm | 1 | R251 |
| 116-161301f26 | metal film Resistor 1.30K 1/6W MF 26mm | 3 | R226,R228,R236 |
| 116-161822f26 | metal film Resistor 18.2K 1/6W ± 1% MF 26mm | 1 | R214 |
| 116-162001f26 | metal film Resistor 2.00K 1/6W ± 1% MF 26mm | 1 | R215 |
| 116-162492f26 | metal film Resistor 24.9K 1/6W ± 1% MF 26mm | 2 | R257,R258 |
| 116-164320f26 | metal film Resistor 432Ω 1/6W ± 1% MF 26mm | 1 | R265 |
| 116-166813f26 | metal film Resistor 681K 1/6W ± 1% MF 26mm | 1 | R262 |
| 110-20152j20 | Resistor 1.5K 2W ± 5% CF 20mm KINK | 1 | R208 |
| 113-500r1j10 | cement Resistor 0.1Ω5W ± 5% | 2 | R224,R225 |
| 116-142003f26 | metal film Resistor 200K 1/4W ± 1% MF 26mm | 1 | R209 |
| <i>Capacitors</i> | | | |
| 130-2b102k503 | disc Capacitor 1000P 50V ± 10% | 1 | C165 |
| 130-3f104z503 | disc Capacitor 0.1U 50V +80/-20% | 2 | C163,C164 |
| 130-ch101j503 | disc Capacitor 100P 50V ±5% | 2 | C159,C160 |
| 135-3107m16 | electrolytic Cap 100uF 16V ±20% | 2 | C166,C167 |
| 135-3226m50 | electrolytic Cap 22U 50V ±20% | 2 | C161,C162 |
| 135-3227m10 | electrolytic Cap 220U 10V ±20% | 2 | C156,C157 |
| 139-3227m16 | low leakage ec 220uF 16V ± 20% | 1 | C155 |
| 140-rx103ka03 | multilayer Cap 10nF 100V X7R 10% | 1 | C174 |
| 140-rx473kb03 | multilayer Cap 47nF 200V X7R ± 10% | 2 | C172,C173 |
| 135-4228m35 | electrolytic Cap 2200uF 35V ± 20% | 2 | C170,C171 |
| 135-4688m80 | electrolytic Cap 6800U 80V ± 20% | 2 | C168,C169 |
| <i>Semiconductors</i> | | | |
| 190-161431c1p1 | IC TL431CLP Shunt Regulator | 1 | D115 |
| 192-027c1815gr | Transistor 2SC1815GR NPN | 4 | Q110,112,114,117 |
| 192-028a1015gr | Transistor 2SA1015GR PNP | 3 | Q111,113,115 |
| 192-1572n5551 | Transistor FSC 2N5551 NPN | 1 | Q109 |
| 192-1582n5401 | Transistor FSC 2N5401 AI-PNP 350V 500mA TO-92 | 1 | Q108 |
| 197-031n4148 | diode 100mA 75V SIGNAL IN4148 ROHM | 7 | D118,119,120,121,125,126,117 |
| 199-15000565 | ZENER diode 5.6V 1/2W 52mm | 1 | D116 |
| 199-15001505 | ZENER diode 15V 1/2W 52mm | 1 | D122 |
| 199-15002005 | ZENER diode 20V 1/2W 52mm | 1 | D129 |
| 192-991d669a | Transistor HI-SINCERITY HSD669A NPN | 1 | Q116 |
| 192-992b649t | Transistor HSB649T PNP | 1 | Q118 |
| 190-161m324n | I.C.LM324N QUAD OP-AMP | 1 | U107 |
| 197-00db103g | diode 1A 200V DF02M DB103G BRIDGE | 1 | D124 |
| 197-00kbu1003 | diode 10A 200V KBU1003 BRIDGE | 1 | D123 |
| 197-101n4002 | diode 1N4002 | 1 | D114 |

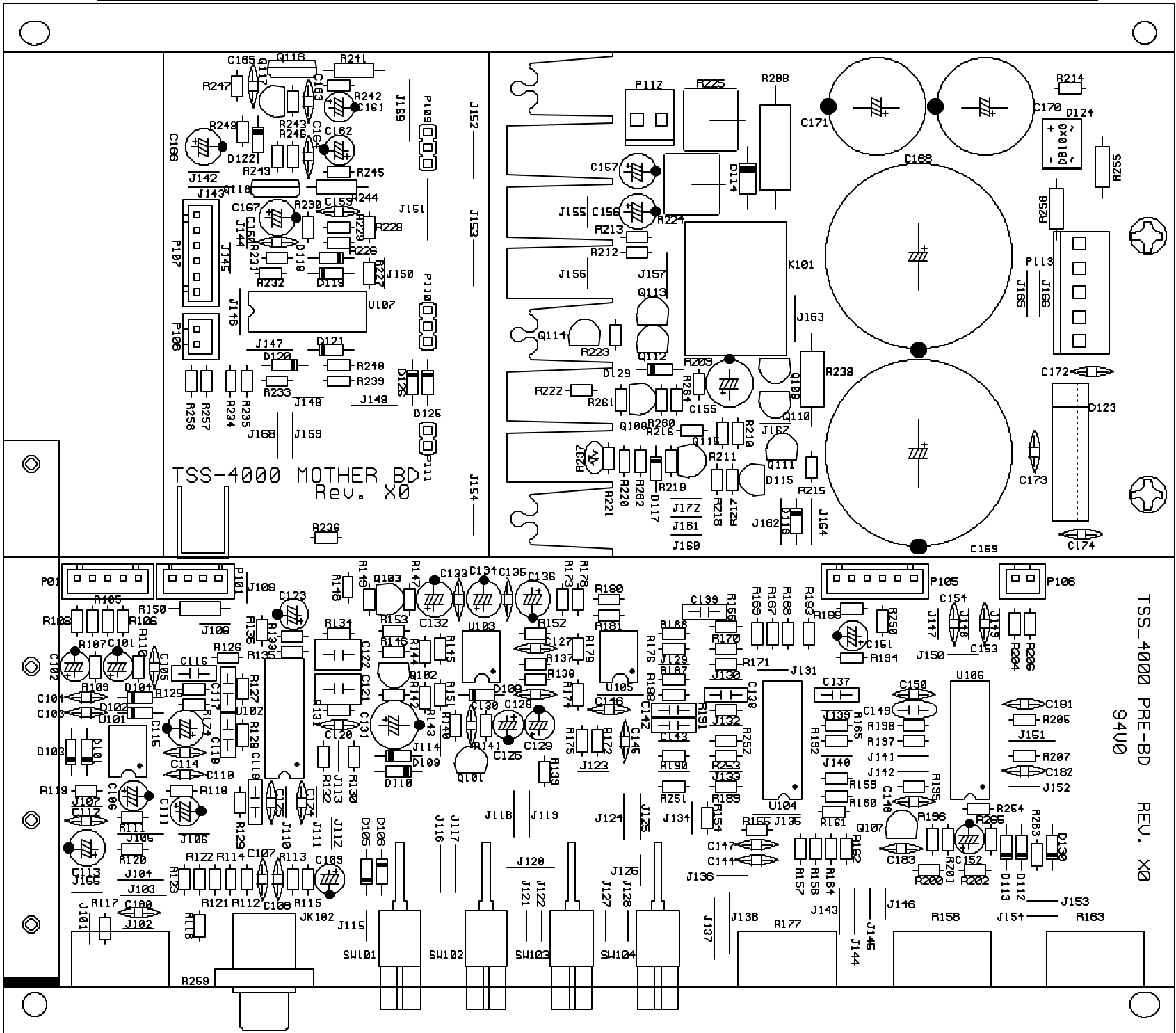
| Part Number | Description | Qty | Reference Designator |
|------------------------|---|-----|--|
| MAIN PCB | | | |
| <i>Miscellaneous</i> | | | |
| 109-1tsc103j0 | thermister TSC05103J | 1 | R237 |
| 162-10229004 | wire assy 220mm AWG28 | 1 | P107 |
| 171-udhss124d | relay 5A 24V UDH-SS124D | 1 | K101 |
| 175-1c02p01 | coupling 2PIN PITCH=2.5mm | 1 | P108 |
| 175-1c06v01 | coupling 6PIN PITCH=2.5mm | 1 | P105 |
| 175-1d02v01 | coupling 2PIN PITCH=3.96mm | 1 | P112 |
| INPUT/RABOS PCB | | | |
| <i>Resistors</i> | | | |
| 110-14152j26 | Resistor 1.5K 1/4W ± 5% CF 26mm | 1 | R150 |
| 110-16101j26 | Resistor 100Ω/1/6W ± 5% CF 26mm | 4 | R112,R113,R151,R152 |
| 110-16102j26 | Resistor 1K 1/6W ± 5% CF 26mm | 2 | R140,R196 |
| 110-16103j26 | Resistor 1K 1/6W ± 5% CF 26mm | 9 | R118,126,129,133,136,146,149,199,156 |
| 110-16105j26 | Resistor 1M 1/6W ± 5% CF 26mm | 2 | R145,R181 |
| 110-16106j26 | Resistor 10M 1/6W ± 5% CF 26mm | 1 | R186 |
| 110-16151j26 | Resistor 150Ω/1/6W ± 5% CF 26mm | 1 | R139 |
| 110-16154j26 | Resistor 150K 1/6W ± 5% CF 26mm | 1 | R138 |
| 110-16183j26 | Resistor 18K 1/6W ± 5% CF 26mm | 1 | R147 |
| 110-16203j26 | Resistor 20K 1/6W ± 5% CF 26mm | 1 | R200 |
| 110-16221j26 | Resistor 220Ω/1/6W ± 5% CF 26mm | 2 | R119,R120 |
| 110-16223j26 | Resistor 22K 1/6W ± 5% CF 26mm | 2 | R141,R148 |
| 110-16472j26 | Resistor 4.7K 1/6W ± 5% CF 26mm | 1 | R144 |
| 110-16473j26 | Resistor 47K 1/6W ± 5% CF 26mm | 1 | R137 |
| 110-16474j26 | Resistor 470K 1/6W ± 5% CF 26mm | 1 | R143 |
| 110-164r7j26 | Resistor 4.7Ω/1/6W ± 5% CF 26mm | 1 | R153 |
| 116-161000f26 | metal film Resistor 100Ω/1/6W ± 1% MF 26mm | 1 | R154 |
| 116-161001f26 | metal film Resistor 1K 1/6W ± 1% MF 26mm | 12 | R130,131,132,159,160,166,171,173,178,192,114,115 |
| 116-161103f26 | metal film Resistor 100K 1/6W ± 1% MF 26mm | 1 | R174 |
| 116-161502f26 | metal film Resistor 15.0K 1/6W ± 1% MF 26mm | 2 | R162,R168 |
| 116-161504f26 | metal film Resistor 1.5M 1/6W ± 1% MF 26mm | 1 | R142 |
| 116-161622f26 | metal film Resistor 16.2K 1/6W ± 1% MF 26mm | 1 | R188 |
| 116-161742f26 | metal film Resistor 17.4K 1/6W ± 1% MF 26mm | 4 | R124,R125,R127,R128 |
| 116-162001f26 | metal film Resistor 2.00K 1/6W ± 1% MF 26mm | 1 | R202 |
| 116-162052f26 | metal film Resistor 20.5K 1/6W ± 1% MF 26mm | 2 | R197,R198 |
| 116-162211f26 | metal film Resistor 2.21K 1/6W ± 1% MF 26mm | 1 | R172 |
| 116-162212f26 | metal film Resistor 22.1K 1/6W ± 1% MF 26mm | 3 | R193,R204,R206 |
| 116-162671f26 | metal film Resistor 2.67K 1/6W ± 1% MF 26mm | 1 | R155 |
| 116-163323f26 | metal film Resistor 332K 1/6W ± 1% MF 26mm | 1 | R195 |
| 116-163400f26 | metal film Resistor 340Ω/1/6W ± 1% MF 26mm | 2 | R164,R169 |
| 116-163571f26 | metal film Resistor 3.57K 1/6W ± 1% MF 26mm | 1 | R157 |
| 116-163923f26 | metal film Resistor 392K 1/6W ± 1% MF 26mm | 1 | R201 |
| 116-164751f26 | metal film Resistor 4.75K 1/6W ± 1% MF 26mm | 2 | R109,R110 |
| 116-164752f26 | metal film Resistor 47.5K 1/6W ± 1% MF 26mm | 2 | R121,R122 |
| 116-164992f26 | metal film Resistor 49.9K 1/6W ± 1% MF 26mm | 1 | R135 |
| 116-165231f26 | metal film Resistor 5.23K 1/6W ± 10% MF | 2 | R205,R207 |
| 116-165232f26 | metal film Resistor 52.3K 1/6W MF 26mm | 1 | R190 |
| 116-165400f26 | metal film Resistor 540Ω/1/6W MF 26mm | 1 | R175 |
| 116-166041f26 | metal film Resistor 6.04K 1/6W ± 1% MF 26mm | 2 | R165,R170 |
| 116-166800f26 | metal film Resistor 680Ω/1/6W ± 1% MF 26mm | 1 | R176 |
| 116-168250f26 | metal film Resistor 825Ω/1/6W ± 1% MF 26mm | 2 | R161,R167 |
| 116-168661f26 | metal film Resistor 8.66K 1/6W ± 1% MF 26mm | 1 | R134 |
| 116-169311f26 | metal film Resistor 9.31K 1/6W ± 1% MF 26mm | 2 | R189,R179 |
| 115-h103a101 | variable Resistor A10K LEVEL | 1 | R259 |
| 115-h103a203 | variable Resistor RV16A01-20-15K-A10K-3E RABOS LEVEL, RABOS WIDTH | 2 | R158,R177 |
| 115-h103c201 | variable Resistor RV16A01-20-15K-C10K-3E RABOS FREQ. | 1 | R163 |

| Part Number | Description | Qty | Reference Designator |
|------------------------|--|-----|--|
| INPUT/RABOS PCB | | | |
| <i>Capacitors</i> | | | |
| 129-a102j633 | metalized Capacitor 0.001uF 63V ± 5% MSC | 1 | C148 |
| 129-a103j633 | metalized Capacitor 10NF 63V | 1 | C183 |
| 129-a104j633 | metalized Capacitor 0.1U 63V ± 5% MSC | 6 | C116,137,138,139,143,118 |
| 129-a223j633 | metalized Capacitor 0.022U 63V ± 5% MSC | 1 | C150 |
| 129-a224j633 | metalized Capacitor 0.22uF 63V ± 5% MSC | 2 | C121,C122 |
| 129-a473j633 | metalized Capacitor 0.047U 63V ± 5% MSC | 3 | C117,C119,C149 |
| 130-2b102k503 | disc Capacitor 1000P 50V ± 10% | 2 | C181,C182 |
| 130-2b221k503 | disc Capacitor 220P 50V ± 10% | 3 | C107,C108,C128 |
| 130-3f104z503 | disc Capacitor 0.1U 50V +80/-20% | 13 | C112,114,124,125,130,133,135,144,145,146,147,153,154 |
| 130-3f473m503 | disc Capacitor 0.047U 50V ± 20% | 1 | C180 |
| 130-sl101k503 | disc Capacitor 100P 50V SL ± 10% | 2 | C110,C120 |
| 130-s1470k503 | disc Capacitor 47P 50V ± 10% | 1 | C127 |
| 135-3105m50 | electrolytic Cap 1U 50V ± 20% | 1 | C126 |
| 135-3106m50 | electrolytic Cap 10uF 50V ± 20% | 4 | C109,C111,C123,C129 |
| 135-3107m16 | electrolytic Cap 100uF 16V ± 20% | 5 | C113,115,132,134,136 |
| 135-3107m25 | electrolytic Cap 100U 25V ± 20% | 1 | C152 |
| 135-3226m50 | electrolytic Cap 22U 50V ± 20% | 1 | C151 |
| 139-3227m16 | low leakage electrolytic Cap 220uF 16V ± 20% | 1 | C131 |
| 129-a683j633 | metalized Capacitor 0.068uF 63V ± 5% MSC | 1 | C142 |
| <i>Semiconductors</i> | | | |
| 192-027c1815gr | Transistor 2SC1815GR NPN | 3 | Q101,Q102,Q103 |
| 197-031n4148 | diode 100mA 75V SIGNAL IN4148 ROHM | 7 | D105,106,108,109,110,112,113 |
| 199-15000825 | zener diode 8.2V 1/2W 52mm | 1 | D130 |
| 190-06m4558d | IC.0PA 4558D DUAL OP-AMP | 2 | U101,U103 |
| 190-16t1072n | I.C. TL072N DUAL OP-AMP | 1 | U105 |
| 190-16t1074cn | I.C TL074CN ST QUAD OP-AMP | 3 | U102,U104,U106 |
| 192-153mpf102 | I.C FAIRCHILD MPF102 FET | 1 | Q107 |
| <i>Miscellaneous</i> | | | |
| 180-t000ts81 | TACT switch L101 T2 LO-PASS,PHASE,RABOS | 3 | SW102,SW103,SW104 |
| 174-0rcb202vag | RCA JACK RCA-209 | 1 | JK102 |
| 175-1c02p01 | coupling 2PIN PITCH=2.5mm | 2 | P106,P101 |
| CLASS D AMP PCB | | | |
| <i>Resistors</i> | | | |
| 118-12061001j | SMD Resistor 1.00K 1206 5% | 1 | R2 |
| 118-12061002j | SMD Resistor 10.0K 1206 5% | 6 | R25,29,30,30B,7,9 |
| 118-120610r0j | SMD Resistor 10.0Ω 1206 5% | 4 | R20,R20B,R22,R23 |
| 118-12062002j | SMD Resistor 20.0K 1206 5% | 1 | R26 |
| 118-12062201j | SMD Resistor 2.20K 1206 5% | 19 | R6,13,16,31,33,34,34,35,37,38,39,40,41,42,43,44,45,46,32 |
| 118-12062204j | SMD Resistor 2.20M 1206 5% | 1 | R4 |
| 118-12062701j | SMD Resistor 2.70K 1206 5% | 1 | R10 |
| 118-12063000j | SMD Resistor 300.0Ω 1206 5% | 1 | R24 |
| 118-12063301j | SMD Resistor 3.30K 1206 5% | 5 | R1,14,15,27,28 |
| 118-12063902j | SMD Resistor 39.0K 1206 5% | 1 | R3 |
| 118-12064700j | SMD Resistor 470Ω 1206 5% | 3 | R8,R11,R21 |
| 118-12064701j | SMD Resistor 4.70K 1206 5% | 2 | R5,R12 |
| 112-10180j00 | fusible Resistor FMF 1W 18Ω5% | 1 | |
| <i>Capacitors</i> | | | |
| 141-c0101k50 | SMD Capacitor 100pF 50V 10% 1206 NP0 | 1 | C4 |
| 141-c0220k50 | SMD Capacitor 22pF 50V 10% 1206 SMT NP0 | 1 | C5 |
| 141-c0561k50 | SMD Capacitor 560pF 50V 10% 1206 NP0 | 1 | C6 |
| 141-c5104m50 | SMD Capacitor 1206 Y5V 0.1uF 50V±20% | 8 | C2,3,7,8,9,10,11,15 |

| Part Number | Description | Qty | Reference Designator |
|------------------------|---|-----|----------------------|
| CLASS D AMP PCB | | | |
| 141-c7223k50 | SMD Capacitor 0.022uF 50V 10% 1206 X7R | 1 | C13 |
| 141-d7104ka0 | SMD Capacitor 0.1uF 100V 10% 1210 X7R | 4 | C12,C14,C18,C19 |
| 130-s1681kb03 | disc Capacitor SL 680PF 200V | 1 | |
| 132-104kb50 | mylar Capacitor 0.1U±10% 250V LS-10.mm MD | 1 | C20 |
| 132-105kb50 | mylar Capacitor 1uF 250V ±10% | 1 | C40 |
| <i>Semiconductors</i> | | | |
| 190-16t1072dts | SMD I.C.TL072CDT SGS THOMSON DUAL OP-AMP | 1 | IC1 |
| 192-09124126qs | SMD Transistor 2SC2412K-T146Q/R ROHM | 2 | Q1,Q4 |
| 192-09139066rs | SMD Transistor 2SC3906K-T146R ROHM | 2 | Q2,Q8 |
| 192-091sc4672 | Transistor 2SC4672(MPT3)ROHM | 1 | Q5B |
| 192-09210376qs | SMD Transistor 2SA1037K-T146Q/R ROHM | 2 | Q7,Q9 |
| 192-09215146rs | SMD Transistor 2SA1514K-T146R ROHM | 1 | Q3 |
| 192-1582n5401 | Transistor FSC 2N5401 AI-PNP 350V 500mA TO-92 | 1 | Q6B |
| 197-03r1s4148s | SMD diode RLS4148-TE11 ROHM | 8 | D1,2,3,4,5,5B,6,20 |
| 199-15000563s | SMD ZENER 5.6V 5% PHILIPS BZX84-C5V6 | 2 | Z1,Z2 |
| 199-15001203s | SMD ZENER 12V 5% PHILIPS BZX84-C12 | 4 | Z3,Z4,Z5,Z6 |
| 192-232irf9640 | Transistor FET IRF9640 IR P-CH TO220 | 2 | Q10,Q10B |
| 192-233f640n | Transistor FET IRF640n INTERNATIONAL | 1 | Q11 |
| <i>Miscellaneous</i> | | | |
| 122-13151k0190 | CHOKE SA-500-280(PT1601B*151MAA) | 1 | L1 |
| 122-14300k4 | Ferrite core LD1215*300KU±10% | 1 | L2 |
| 128-e106ma01-s | non-polar ec 10uF 100V 20% | 2 | C16,C17 |
| 175-9f40hr2 | coupling 40PIN PITCH=2.54mm HR2*40 | 0.2 | |
| MISCELLANEOUS | | | |
| 150-r1107008 | power transformer TT093040561A | 1 | T01 |
| 152-u602015 | line cord SVTFT-2 6FT | 1 | |
| 154-k31505t0 | Fuse 3.15a 250v 30mm UL/CSA/PSE | 1 | F01 |
| 155-630r345b | fuse holder UL/CSA φ6*30mm | 1 | for F01 |
| 162-10100023 | WIRE UL/CSA 1617#22 100mm BLK | 1 | |
| 162-1035d001 | wire 1015#16 BRN/WHT 350mm 2PIN | 1 | |
| 162-1035d002 | wire 1015#16 BLK/YEL/RED 350mm 6PIN | 1 | |
| 162-50259004 | wire 250mm AWG24 | 1 | P108 |
| 162-5035d003 | wire 2468#26AWG 2PIN RED/BLK 350mm | 1 | |
| 163-11009 | wire 100mm | 4 | |
| 166-5070a4fd | speaker wlre 700mm #18 UL1015 #205*0.5t/#250*0.8t | 1 | |
| 176-wjce2 | wire connector &Base CE-2 | 1 | |
| 180-prf1003b | Switch ROCK RF-1003-BB210 POWER | 1 | |
| 193-0s4211 | INSULATOR(INSULATION SPACER)42*11 | 1 | |
| 193-201612tr | INSULATOR T0-220 16mm*12mm | 1 | |
| 193-201815t2 | INSULATOR | 2 | |





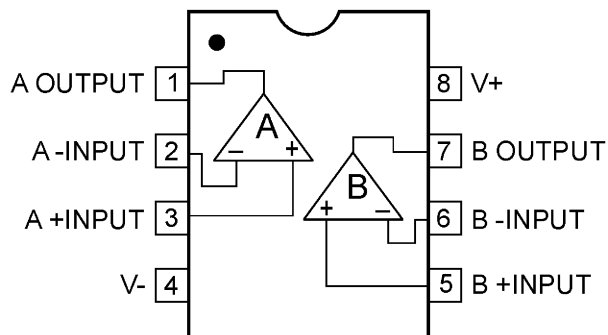


TSS-4000 MOTHER BD
Rev. X0

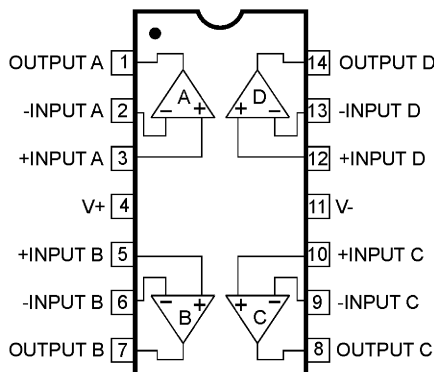
TSS_4000 PRE-BD
94V0
REV. X0

Integrated Circuit Diagrams

4558, TL072 DUAL OP-AMP
IC1, U101,103,105



OPAMP,
QUAD 14P DIL TL074 LM324
U102, 104, 106, 107

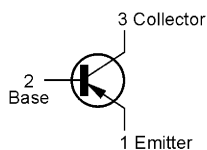
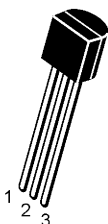


TL431CLP
D115



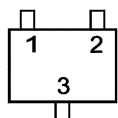
1. Cathode
2. Anode
3. Reference

2N5401
Q6B, 108



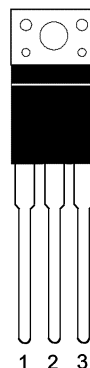
2SC2412K
2SC3906K
2SC4672K
2SA1037K

Q1-4, 5B, 7, 8, 9



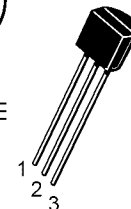
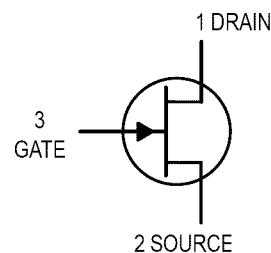
- 1) Emitter
- 2) Base
- 3) Collector

MOSFET IRF640, 9640
Q10,10B,11

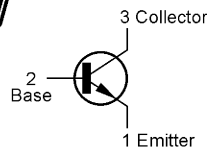
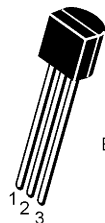


1. G
2. D
3. S

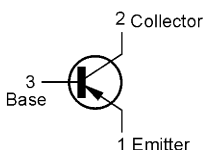
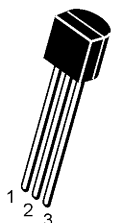
MPF102
Q107



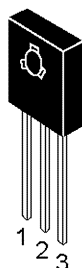
2N5551
Q109



2SA1015
Q111,113,115

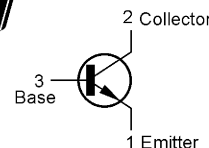


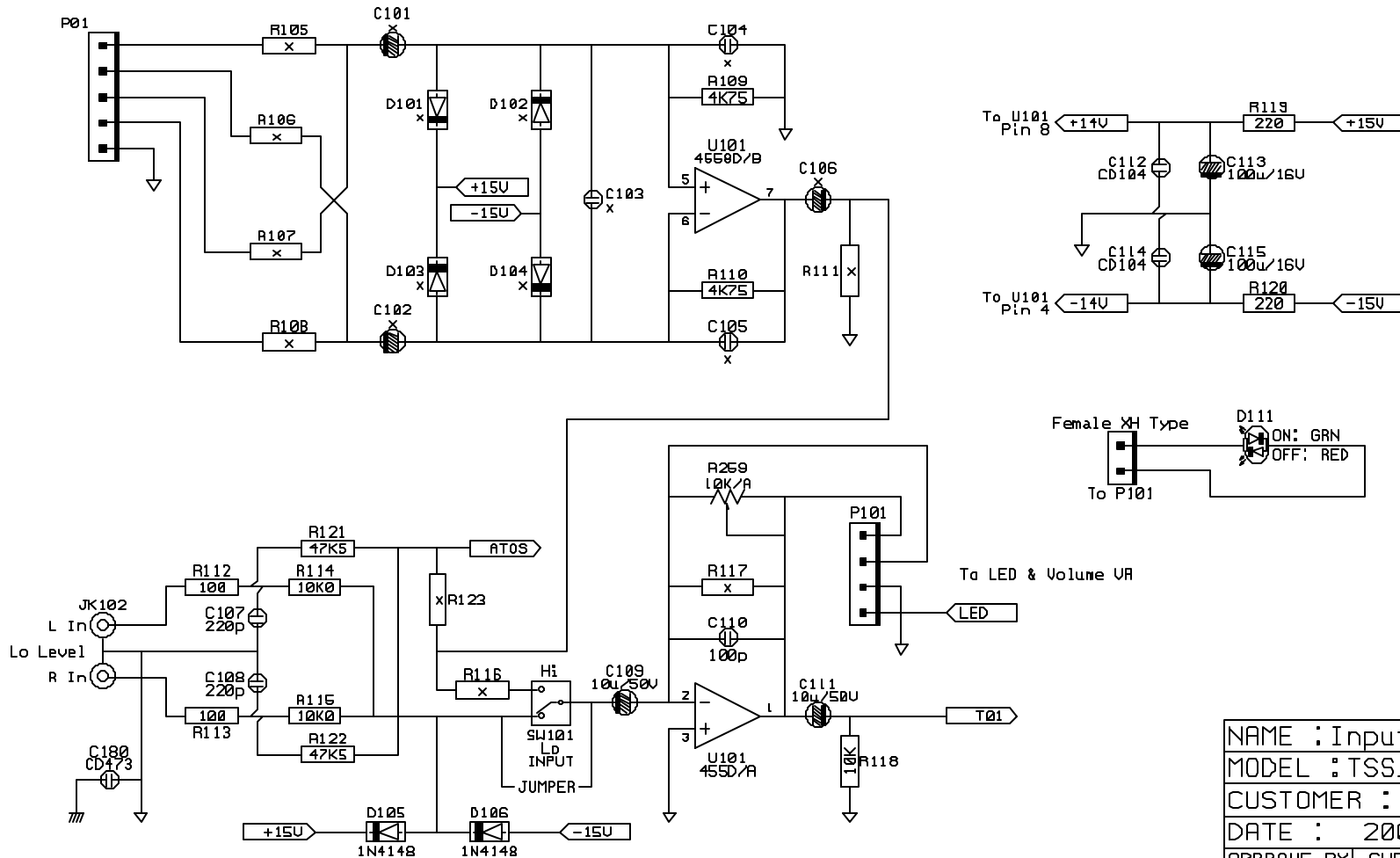
HSD669A, HSB649A
Q116,118



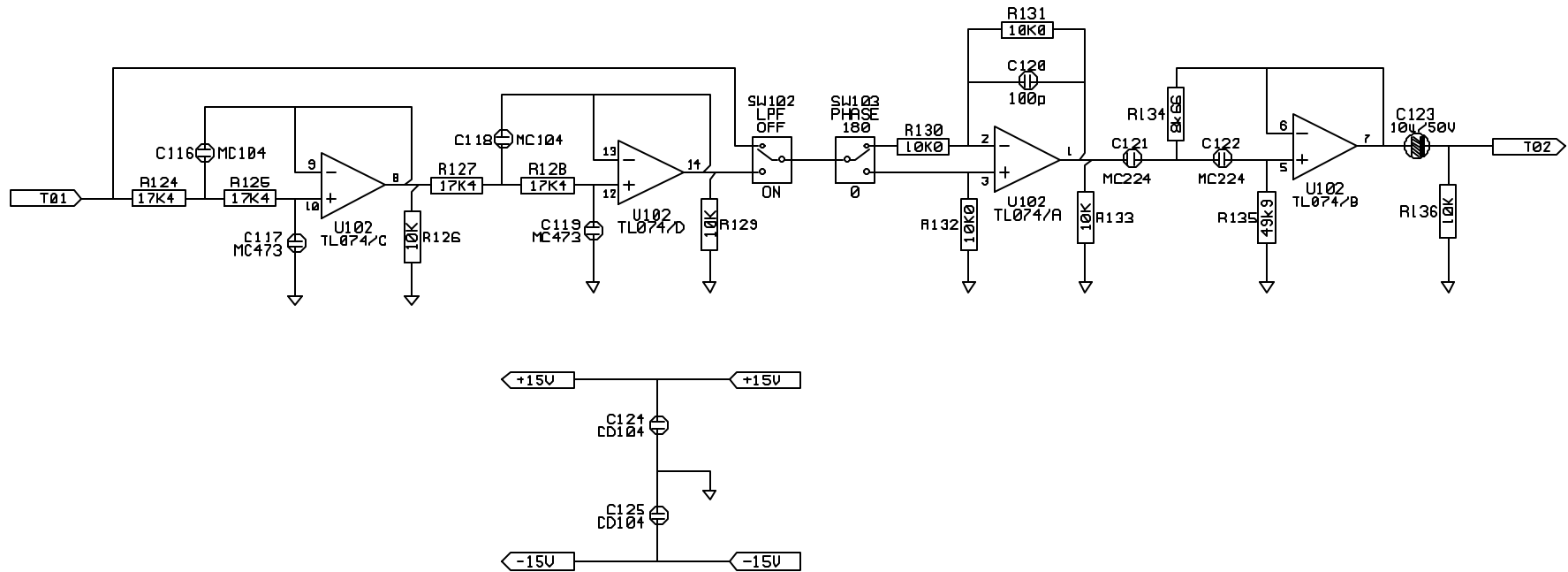
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2. Collector
3. Base

2SC1815
Q101,102,103,110,112,114,117

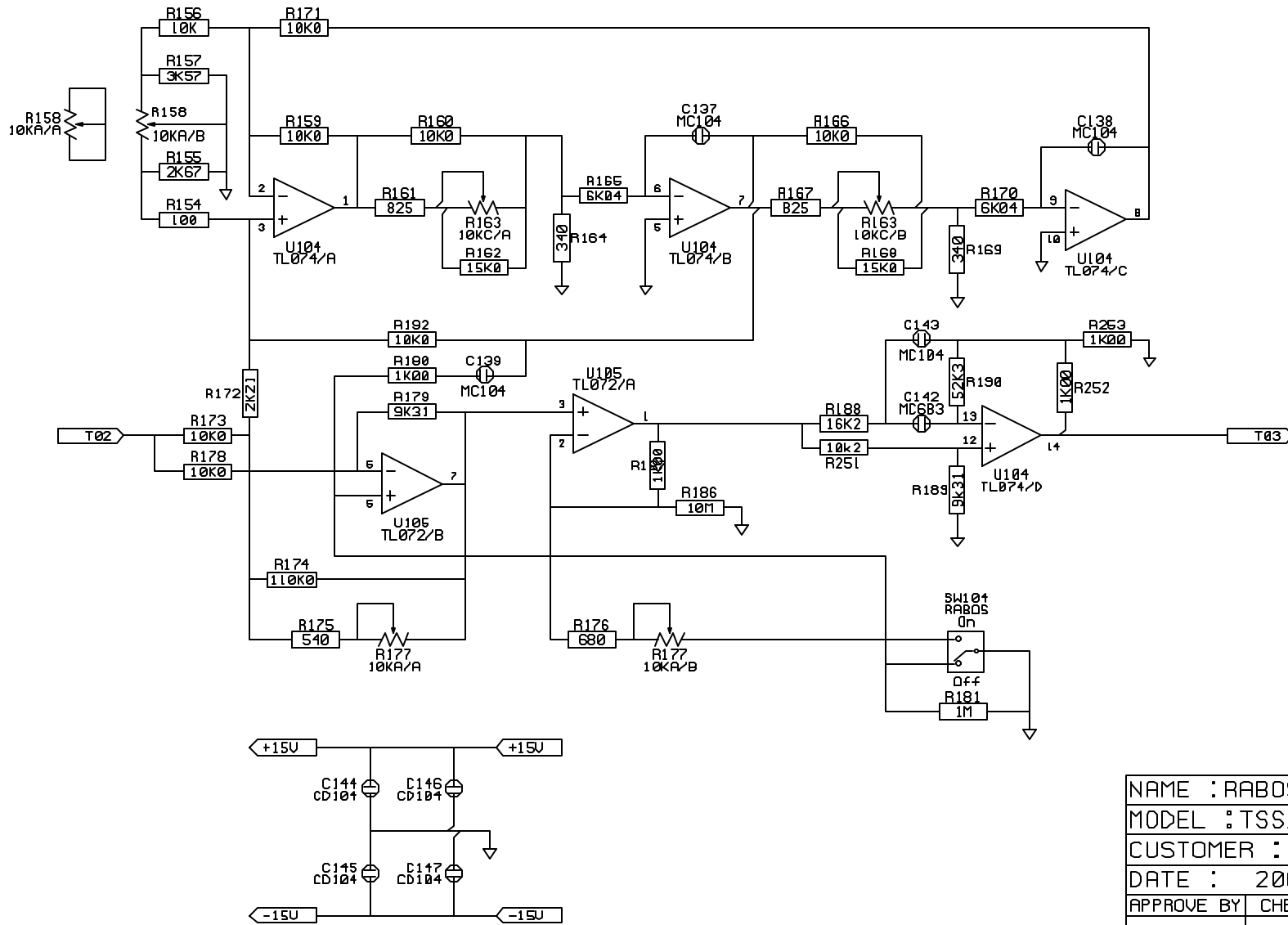




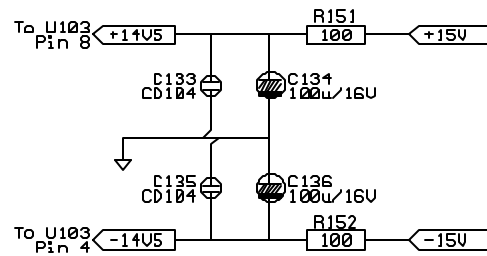
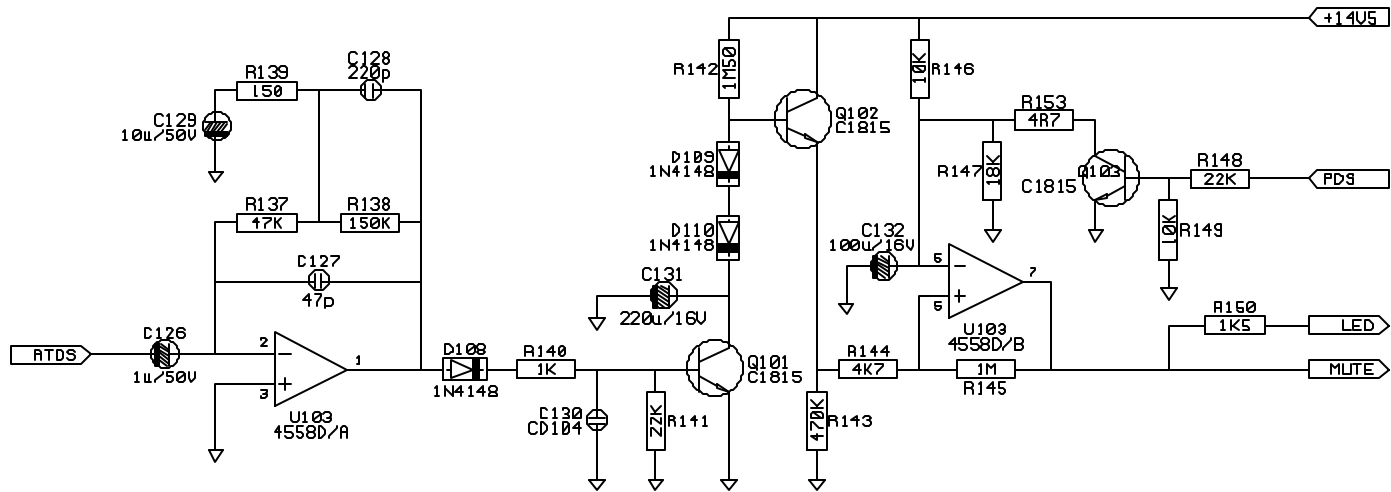
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| CUSTOMER : Infinity | |
| DATE : 2004-12-13 | |
| APPROVE BY | CHECK BY DRAWING BY |
| | |



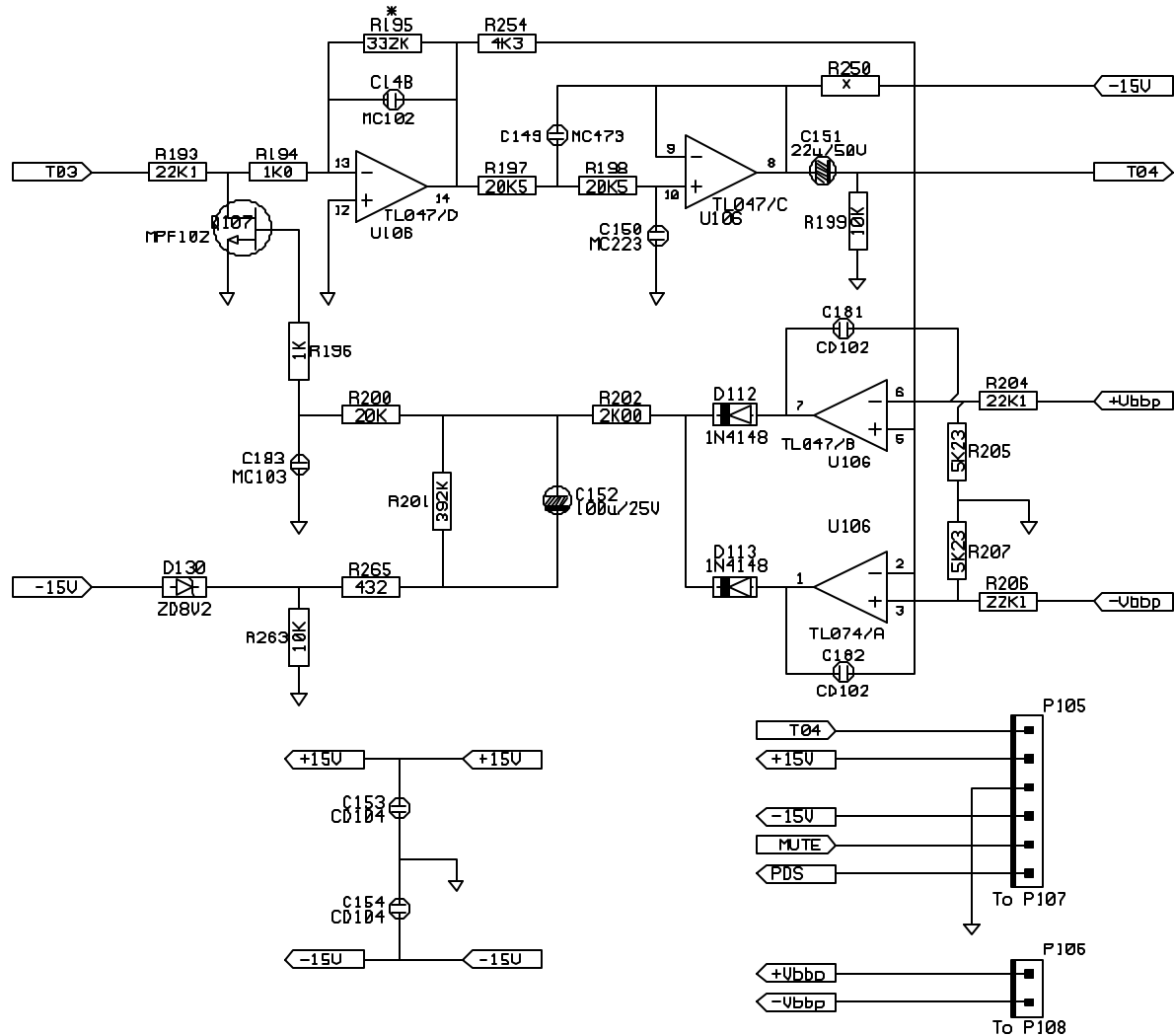
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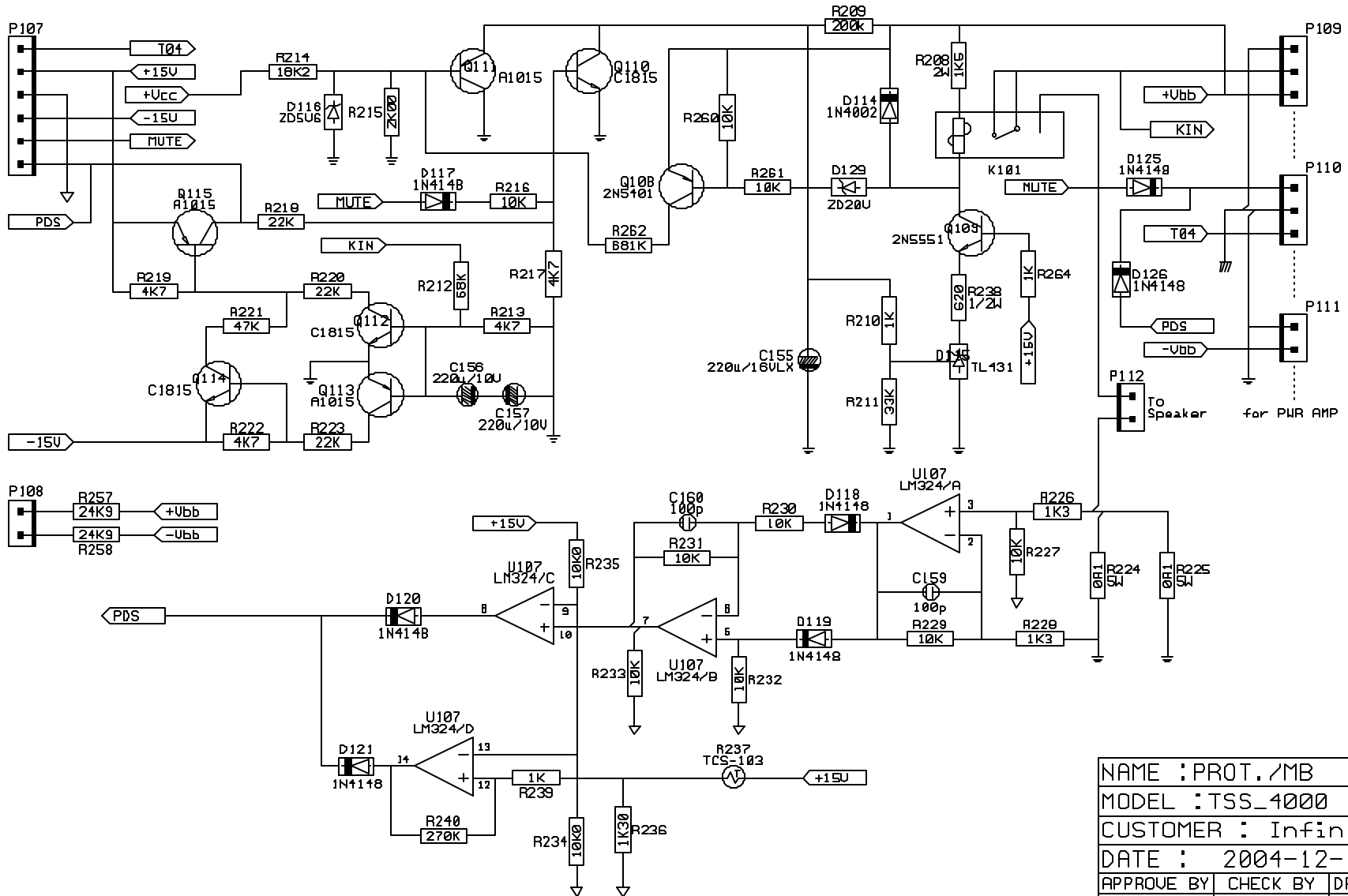
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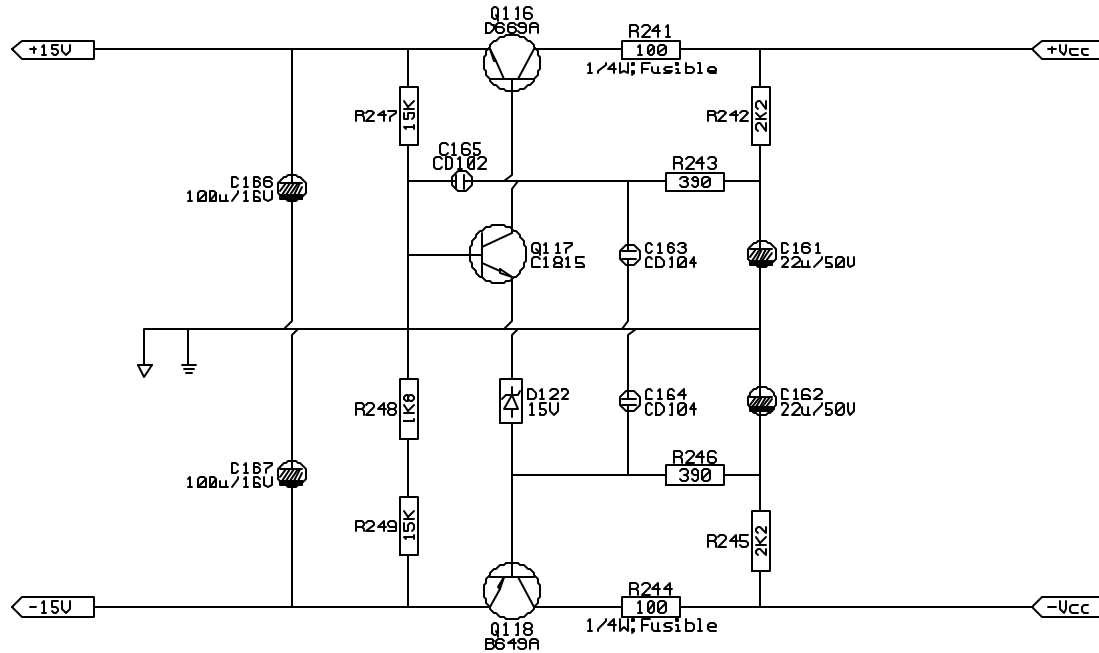
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| CUSTOMER : Infinity | |
| DATE : 2004-12-13 | |
| APPROVE BY | CHECK BY DRAWING BY |
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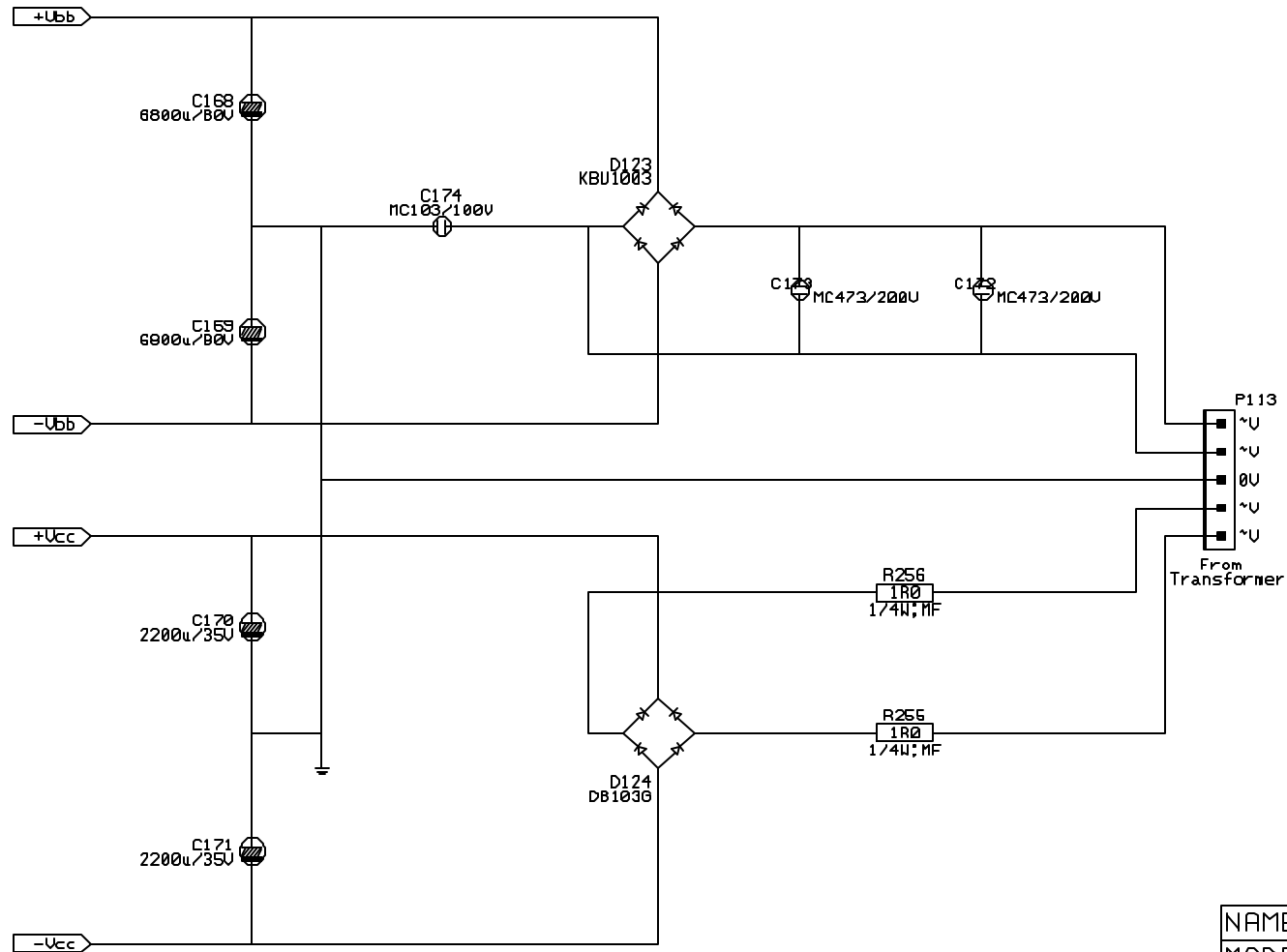
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| NAME :Limiter/PRE | 5/10 |
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| APPROVE BY | CHECK BY DRAWING BY |
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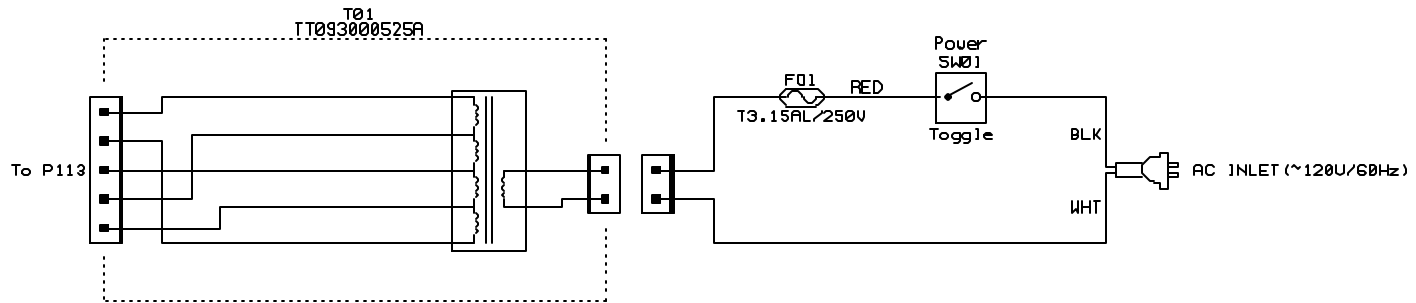
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| NAME : PROT./MB | 6/10 |
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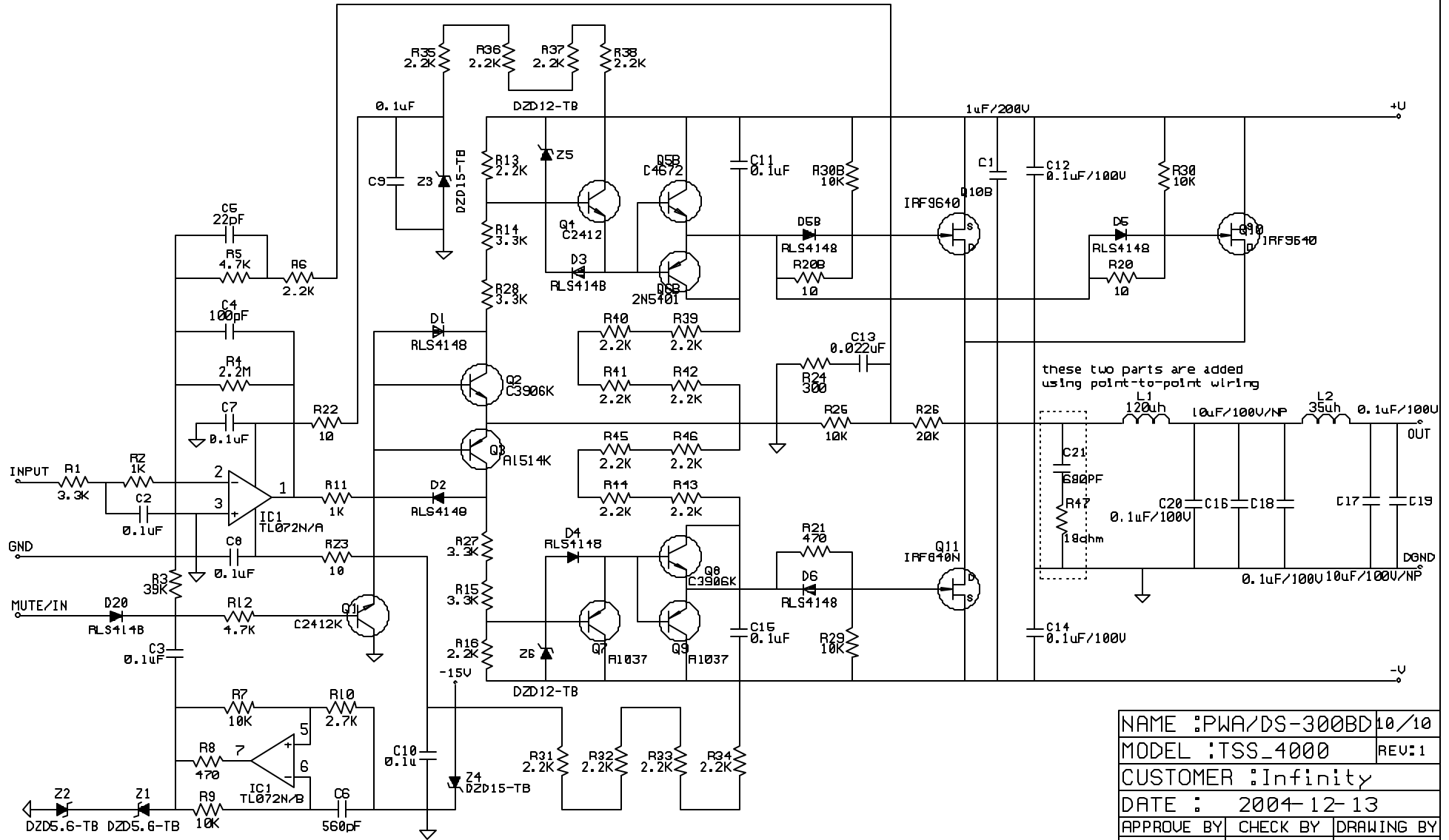
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| NAME : PN15V/MB | 7/10 |
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| CUSTOMER : Infinity | |
| DATE : 2004-12-13 | |
| APPROVE BY | CHECK BY DRAWING BY |
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|---------------------|----------|
| NAME :DC Power/MB | 8/10 |
| MODEL :TSS_4000 | REV:1 |
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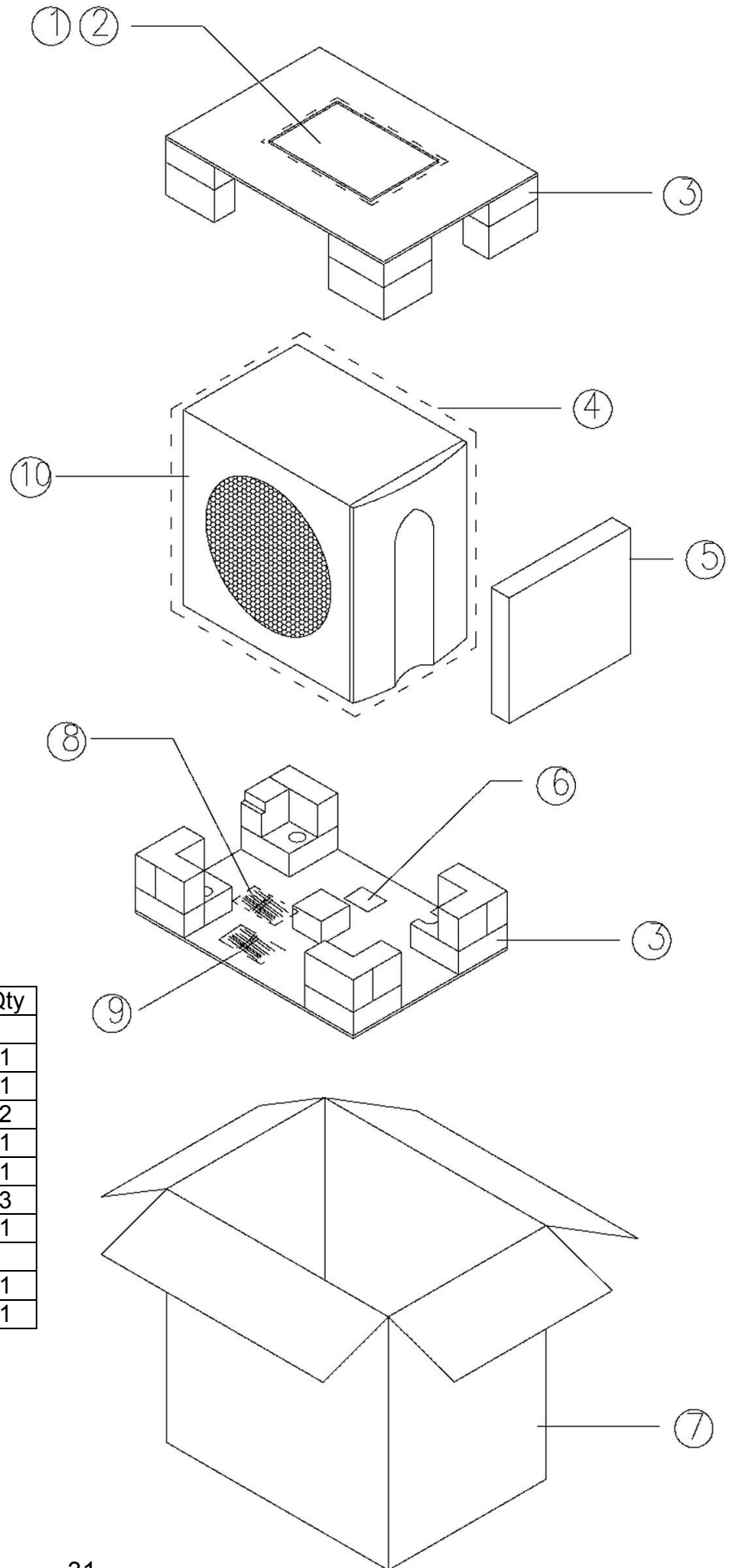


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|---------------------|----------|
| NAME : AC INLET | 9/10 |
| MODEL : TSS_4000 | REV: 1 |
| CUSTOMER : Infinity | |
| DATE : 2004-12-13 | |
| APPROVE BY | CHECK BY |
| | |
| DRAWING BY | |
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| | |
|--------------------|---------------------|
| NAME :PWA/DS-300BD | 10/10 |
| MODEL :TSS_4000 | REV:1 |
| CUSTOMER :Infinity | |
| DATE : 2004-12-13 | |
| APPROVE BY | CHECK BY DRAWING BY |
| | |

PACKAGE



| Ref # | Description | Part Number | Qty |
|-------|--------------------|----------------|-----|
| 1 | Owner's Manual | 406-000-05133 | 1 |
| 2 | Warranty Card | 405-000-00328 | 1 |
| 3 | Top/Bottom Packing | 431-000-05293 | 2 |
| 4 | Plastic Bag | | 1 |
| 5 | RABOS Kit | 335852-003 | 1 |
| 6 | Silica Gel | | 3 |
| 7 | Outer Carton | 402-000-05237 | 1 |
| 8 | n/a | | |
| 9 | 15ft. RCA cable | 166-015F011 | 1 |
| 10 | TSS-SUB4000 | TSS-SUB4000PLT | 1 |